AMERICAN BEE JOURNAL

AUGUST, 1918

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Tested	2.00	10.00	18.00
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2-Comb Nuclei	4.00	22.00	42.00
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1-lb. package bees	3.00	16.00	
2-lb. package bees	5.00	28.00	
After July 1.—			
Select untested	$ 1.00	$ 5.50	$10.00
Tested	1.50	8.00	14.00
Select tested	2.00	10.00	18.00
2-Comb Nuclei	3.50	18.00	35.00
3-Comb Nuclei	4.50	25.00	45.00
8-frame Colony	8.00	45.00	
10-frame Colony	10.00	55.00	
1-lb. package bees	2.50	14.00	
2-lb. packages bees	4.50	25.00	

BREEDERS.—The cream selected from our entire stock of outyards; nothing better. These breeders, $5 each.

Can furnish bees on Danzenbaker and L. or Hoffman frames.

Above prices on bees by pound, nuclei, and colonies do not include queen You are to select such queen as you wish with the bees, and add the price.

No bees by pound sent out till first of June.

Breeders, select tested, and tested queens can be sent out as early as weather will permit.

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Reference: Any large supply dealer or any bank having Dun's reference book.

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Bingham Smokers have been improved from time to time, are now the finest on the market, and for nearly forty years have been the standard in this and many foreign countries. For sale by all dealers in bee supplies, or direct from the manufacturers.

	Size of Stove	Weight	Retail
Smoke Engine	4 x7-inch	2¼ lbs.	$1.25
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Two above in copper, extra each			.50
Conqueror	3 x7-inch	1¾ lbs	.85
Little Wonder	3 x5½-inch	1¼ lbs.	.65

Hinged cover on the two larger sizes. Postage extra.

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WITH NEW COLD HANDLE

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Lyle, Minn., June 21, 1917.

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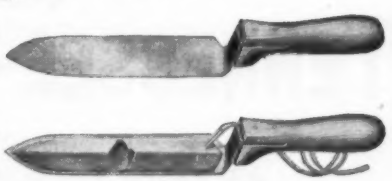
K. H. VOLSTAD.

We sent an 8½ and 10-inch knife and received the following letter:



Lyle, Minn., July 5, 1917.

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K. H. VOLSTAD.

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5 lb. Friction Top Pails in cases of 12	1.10 per case
5 lb. Friction Top Pails in crates of 100	7.50 per crate
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10 lb. Friction Top Pails in cases of 6	.90 per case
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Breed 3-Band Italians Only

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	1	6	12	1	6	12	1	6	12
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Select Untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00
Tested	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00
Select Tested	3.00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00

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Select queen tested for breeding, $5
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American Bee Journal, Hamilton, Ill.

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AMERICAN BEE JOURNAL

VOL. LVIII—NO. 8 HAMILTON, ILL., AUGUST, 1918 MONTHLY, $1.00 A YEAR

A TRIP IN SOUTHERN GEORGIA

The Editor Visits the Georgia Apiaries of J. J. Wilder, Tramping Through the Swampy Underbrush to Get Close-hand Information

RETURNING home in the last days of March, I left wife behind with our children, and was advised by Mr. Wilder to stop at his southern Georgia apiaries, in charge of Mr. W. B. Bradley, with headquarters at Fargo, Ga., on the head waters of the Suwanee River. My wife, in her girlhood days, had often sung of the "Suwanee River, Far, Far Away," but had never known where it was located, and was almost tempted to go with me on that account.

Many people have read of Wilder's numerous apiaries, some rather incredulously, for he numbers them by the hundreds and his colonies by the thousands, shipping 10 or 15 carloads of honey annually. Glints of disbelief have been emitted occasionally by a reader. This was an excellent opportunity to find out how much his statements were worth.

Mr. Bradley, a bright, wide-awake young fellow, was at the station at Fargo when I arrived there in company with Mr. and Mrs. Wilder, who were going home to Cordele and continued on the way. Bradley was going to an apiary 20 miles north, where he had left his automobile, so I got on the train again and we stopped at Thelma. The apiary was in sight of the station, right in the middle of the woods. Imagine a flat country of very straight, slim pines, from which all the large trees have been removed, leaving only the stumps and a thick growth of underbrush composed of saw palmetto, seven or eight different kinds of huckleberry brush, a large amount of gallberry brush (ilex globra), and an occasional cypress swamp with shallow water where different water bushes grow, among which the tupelo gum, nyssa capitata or ogeechee lime, furnishes abundance of honey-producing flowers in April and May.

There, near an apiary of some 80 colonies, two men were working, preparing supers and frames for the harvest. The bee-house, measuring about 20x36 feet, was full of extracting half-story supers, with empty combs in them, and a large lot of barrels which had very evidently contained honey the previous year. It was a business-looking place.

Wilderness of Saw Palmetto and slender Pines in Southern Georgia

Wilder's Apiary at Fruitland, Ga.

While they were cooking the noon meal, I loafed about the swamp, after taking my bearings, for a man readily gets lost in that immensity of flat, sandy, pine land. It was then that I found out why they call by the name of "saw" palmetto the dwarf palmetto, sabal serrulata. Its stem is armed with sharp teeth like those of a saw. The cabbage palmetto, so rich looking in the heart of Florida, is not to be found at this point. The climate is too cool.

The bees were making honey and I noticed them sucking from some huckleberry blossoms, although I was told that these plants produced no honey. Dinner over, Bradley and I started in the auto truck through the swamp, following a winding trail northward, occasionally passing a darkey's cabin, one room with a door, and windows without sash, only wooden shutters. What do they live on in this wilderness? Corn pones and a little bacon. No chickens; rarely a garden spot; only a few razor-back hogs running at large about the swamp. Here and there a white man has settled. He tries to grow crops, but his principal business, if he is not a beekeeper (and beekeepers are few and far between) is to harvest the sap of the pines, which is distilled and made into turpentine. Here and there a northern man has grubbed out a fine farm, built a good home with fences, and has left. The house is empty. Why? He was only a northern sucker! He thought he would show the southern people how to till the land, but the white sand has gotten the best of him.

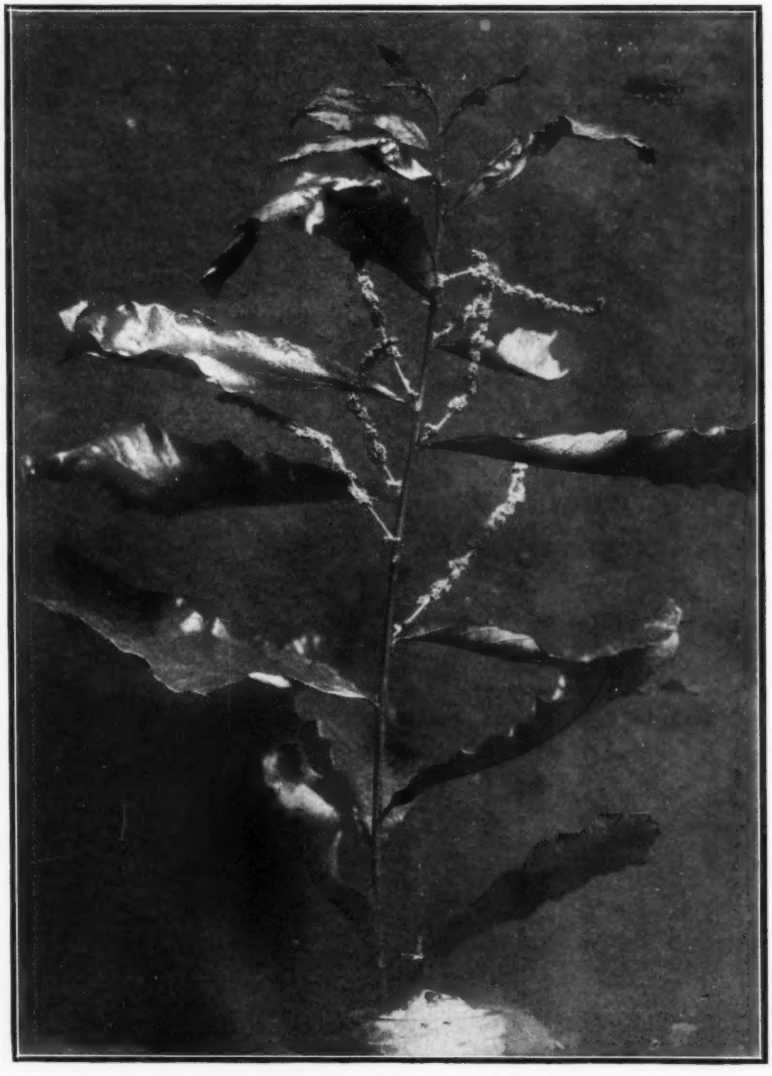
We traveled some 50 miles that afternoon and visited five apiaries. We stopped at one of them a couple of hours and put on supers, for we had a lot of extracting supers with us in the truck. Mr. Bradley is only one of the numerous men Mr. Wilder employs in his business. He is certainly a capable man. His crop of 1917 was 125 barrels. A mute testimonial of an extensive crop is to be seen in the pile of empty combs and supers and the empty barrels in rough sheds at the apiaries, getting ready for the next crop. The hives are all 8-frame Langstroth, with Hoffman frames, the supers half-story. Occasionally a colony is given two full stories, if the queen is sufficiently prolific. Here I learned how one can spread the brood in a hurry with the Hoffman frame; as four or five frames may be shifted at one motion of the hive tool and an outside frame inserted in the center. No danger of chilling the brood in southern Georgia in March, and Mr. Bradley was spreading brood and inserting empty combs in the center, everywhere.

The Wilder apiaries contain a number of colonies of Caucasian bees. These are great "propolizers," as has been shown to us before by Mr. Atwater. At the Bradley apiaries I saw colonies that had almost entirely closed their wide entrance with propolis, leaving but a small hole for the workers to go back and forth, and giving clear evidence of the correctness of the name given by the ancients to this substance "pro polis," two Greek words meaning "before the city." A similar condition is brought about by the bees in the Holy Land, as mentioned by Mr. Baldensperger in our June number. The endless fight against death-head moths induces them to strengthen and narrow down the "gates of the city" with "pro polis."

Chincapin in the Suwanee swamps

The apiaries are in the brush, away from houses, close to the barely visible auto trail. In nearly every case they are protected only by a posted notice offering a reward of $50 for the conviction of thieves. Mr. Bradley has 15 apiaries under his charge. He said that they lost several hundred pounds of honey by thieves every year. But what to do? The Georgia "cracker," "poor white trash" the negro calls him, is, like the negro, of the opinion that whatever he finds in the woods is his property, or ought to be. Hence an occasional theft from the thrifty apiarist, who must figure that in the profit and loss; for to seek the thief and have him punished would probably not be safe. Things burn easily in the pine wilderness. Southern Georgia was ablaze with forest fires in every direction as I traveled through it, and when Mr. Wilder asked Mr. Bradley what the prospect was for honey, the answer was, "It is good if they don't burn us out." Miles and miles of good bee-pasture are devastated by the carelessness of the inhabitants, who seem to delight in burning the woods. At each apiary, the pine needles which cover the ground must be regularly raked away and destroyed, for fear of fire.

The afternoon trip over, we re-



The Chincapin of Georgia and Florida

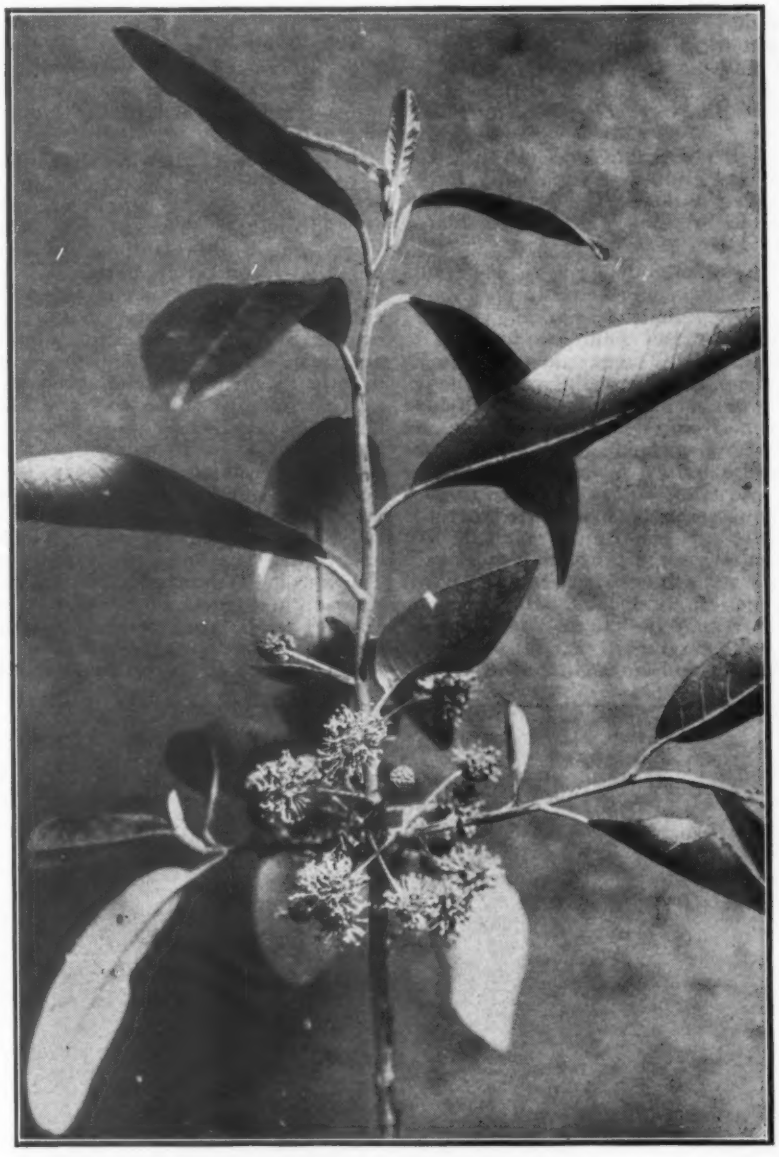
turned to the city of Fargo, late in the evening, through the swamps, the brush and the sand.

The next morning I had the pleasure of visiting the Suwanee River, a wilderness stream, looking like a creek, there, only a few miles from its head, but which I am told widens into an immense river near its mouth, traveling through swamps most of the way. Along this stream, besides the tupelo gum is found the chincapin, castanea pumila, whose flowers produce very dark, inferior honey, but Mr. Wilder, who has a number of apiaries on the lower Suwanee, uses this honey for feeding.

In all these southern, flat, pine timber lands, the principal business of a town is turpentine and lumber. The sawmill is the life of Fargo, for Fargo is no exception to the rule. On the day I was there the town was in a flurry, for the Mill Company had gone into bankruptcy two months before and on that day the mill was sold at auction, with all that belonged to it. This included three-fourths of the houses and the hotel. It was sold in a lump to one party, and the old lady who kept the hotel wondered whether they would close the mill and turn her out of the hotel, which she had kept for a number of years. She was very talkative, and said to me: "I hope they will keep the business going until the war is over, for if they do not, I will starve."

The next day I went to Cordele, where more apiaries were to be visited by me. Beekeepers in the north who have wondered whether Mr. Wilder did not overstate when he wrote of his hundreds of apiaries, need not be in doubt, for he has apiaries all over the south, with reliable men in charge. Mr. F. T. Branch, the man with whom I visited the bees around Cordele, has charge of 20 apiaries, some 1,200 colonies, and these are, like the ones in southern Georgia, located in the brush.

Is the South, therefore a reliable country for beekeepers, and would it be profitable for a northern beekeeper to move there? My answer is in the negative. The Wilder method is certainly good. Many apiaries, scattered over immense spaces, in charge of reliable men who know the resources of the country and can make a profitable season out of a small per-colony yield, bring results. But the drawbacks are numerous. Difficulties of travel, swamps, white sand, unimproved soil. The negroes seem to delight in building forest fires, without any very plain purpose, for after the land is cleared it is probably less valuable than when it had still a growth of young pitch pines. It looked very much as if they only wished to see the big blaze during the cool spring nights. These fires are very damaging to the apiarists, for they not only endanger the hives, but also destroy the immediate expectation of a crop from palmetto or gallberry or other low shrubbery. The only safe honey-producing trees after a forest fire are the tupelo gums, which grow with their foot in the water like the cypress.



The Tupelo Gum of the South

Each country has its special resources, its methods, and it is delightful to go from one region to another and see the different crops, from different soils and entirely different sources. But if you have a good location, do not seek a change. Wherever you go you will find difficulties to overcome and you must remember that "a rolling stone gathers no moss."

How Far Bees Will Go for Honey

By L. B. Smith

IF I am not mistaken (I haven't time to look up the files of the American Bee Journal that I have) I subscribed for this journal in the fall of 1881, while the late Thomas G. Newman was editor. I have been a constant reader of it ever since, with the exception of one year. I have read, and written more or less about bees in nearly all the bee-papers published in the United States and some that were published in other countries. I have been a close student of apiculture all my life. With this introduction to the readers of the American Bee Journal, I shall take up my subject of the distance bees will travel, or fly, for honey.

In the spring of 1882 I purchased my first yellow-banded bees—Italians and Cyprians. People came for miles to see those bees, as they were quite a novelty then. At that time I lived in what was known as the "cross timbers" of Johnson County. Not many bees were kept, and my yellow bees were the first of that color that had been brought into the country. The location was a poor one; all other bees in the community were either black or brown in color, and were as much alike as two black-eyed peas, as the expression is sometimes used. But to get to my point, it was not infrequently that I saw those yellow bees of mine four and five miles out from home, busily engaged in gathering nectar from horse-mint, wild marigold and other plants in season. At that time I was

a novice myself, and gave little thought to the subject, supposing that bees traveled that far or farther, if necessary. Sometime later, however, from reading my beebooks and journals, I noticed that several authors stated that one and one-half to two miles was supposed to be the limit that bees traveled for stores. This set me to thinking, and to investigate further.

In the spring of 1883, an old-time box-hive beekeeper came to my home and said: "Smith, I want you to come down and help me to find a bee-tree." He went ahead to say that some very beautiful yellow bees were working on the blossoms in his orchard. Being a great lover of such pastimes, I agreed upon a date to make the hunt. When the date arrived we met, fully prepared with our equipment to make the search. Sure enough, when we reached his home, there were the yellow bees on the blossoms in great numbers. We proceeded to catch and bait some of them. We soon had a line started that went directly toward my home. We baited and lined those bees for hours, until we had traced them to within a mile of my apiary. We were then convinced that they were my bees. By air line it was fully five miles from my yard to the home of my neighbor.

The two years, 1886 and 1887, were extremely dry in Texas, being remembered by many people as extensive droughts. The first of these years was a total failure for bees; but the second was better. A few local showers of rain fell in different parts of the county. Some parts of the State had fair rains; but in my own immediate vicinity we had practically no rain. Some seven miles away from my home was the black land belt; in favorable years the horse-mint grew to perfection there. It was the chief dependency for a honey crop nearly all years. In this year, several local rains happened to fall there. There was a good bloom in a short time, and my Italian and Cyprian bees averaged a surplus of sixty-eight pounds of honey per colony. The distance from my apiary could not have been less than six or seven miles. While dealing with this point, let me quote a few lines written at that time for Gleanings in Bee Culture, for 1888, March issue, page 206. "To further prove that they (bees) will go six or eight miles, I remember that this year (1887) has been noted for drought, and what rain came has only been partial showers. In June, when the mint blooms, everything here was burned up, but six or eight miles out on the prairie, there was plenty of rain in time to make the mint crop splendid; the result of it is, I got sixty-eight pounds of extracted honey to the colony." Does this look to you, my reader, that bees fly not more than two miles for stores? Don't tell me that I was mistaken, and that the bees gathered this honey from some other source. I was familiar with all the surrounding country for miles; furthermore, I am sure that this plant was not growing any nearer my apiary.

The Caucasians are great Propolizers

At another time, in this same locality, I got a surplus of twenty pounds of comb honey to the hive from the wild marigold, when not a plant of it grew nearer than four miles of my apiary. That year the crop was plentiful about six miles away.

Some three years ago, during the "kinnikinic" bloom—one of the sumac families—a friend of mine was attracted by the loud humming of bees passing over him. This man, Mr. D. H. Stribbling, is a beeman himself, and, being interested, he stopped to investigate. He soon discovered bees by thousands passing over him. From the direction they were coming, and from the color of several, he was persuaded that they were from my own apiary. At that time, he tells me, he was fully three miles from my home yard, and the bees had to go at least one mile further. My home apiary here in Llano County, is situated approximately two and one-half miles from any mesquite timber; yet during a fair blossom this apiary stores surplus honey from this tree about as fast as my outapiaries that are in the midst of the bloom.

Now, in conclusion, it is unnecessary for me to take up more space. I am sure that bees do fly this far here in the South, and that they do gather surplus honey a great deal farther than two and one-half miles from home. Instances are too numerous to the contrary; and too many have reached the same conclusion that I have. Now, gentle reader, understand that I have no long-distance or long-tongued bees for sale. I am merely interested in knowing more about the honeybee.

Llano, Texas.

Entrances

By Arthur C. Miller.

RECENTLY the location of the hive entrance in relation to the position of the combs has again attracted attention, but this time in connection with comb conditions and not with temperature within the hive.

Some years ago beekeepers had a

long and earnest discussion as to whether the hive entrance should be at the side or end of the hive, or, more properly, whether the sides of the combs should be toward the entrance or the ends towards it. The arguments had wholly to do with temperatures, the side entrance being called the "warm" and the end the "cold." Then some gentle and sympathetic soul put a spoke in the wheel by saying that the bees could reach any desired part of the hive easier and quicker with the ends of frames to entrance than the other way, as if time or labor was of consequence to bees. So the supply men settled on the end way. But not so all beekeepers, some wise ones stuck to the side way. Some who were wise or otherwise used two entrances, the second one being an inch hole bored half way up the front of the hive.

To avoid raising the issue of relative warmth, let me say right here that my present remarks have to do with the condition of the combs and position of stores as affected by location of entrance. Size of entrance also enters into consideration of the case, as does the space below the frames. For sundry reasons a space of about one inch below frames is pretty generally considered to be as little as desirable. It is what I use and the conditions I shall describe are with such space.

With a full entrance it is the habit of bees in the fall to cut away the lower part of the combs adjacent to the entrance, the wax secured being used in capping and re-enforcing combs elsewhere in the hive. After the combs get old and leathery this cutting is not so apparent, but the mischief to the combs occurs long before they get tough and black.

Where the combs are end to the entrance the lower front corners are cut away, often for two or three inches back and up. The following spring that space is filled with drone comb.

If combs get turned end for end the other corner gets cut away, and it is not unusual to find both corners filled with drone comb or 9 square inches in each comb, which is 90 square inches of drone comb in a 10-frame hive. This is equal to four-fifths of an L-comb, and when we add the drone cells found in other places we get altogether too much drone comb, often more than a whole L-comb.

Now, drones are not only costly to raise and maintain, but they are also an excitant towards swarming. Besides the expense of the drones we have the loss of foundation. We buy it and put it in the frames and then the bees cut it out. Not a very profitable procedure. So much for the comb condition.

Position of the stores is affected by entrance location. Regularly we hear the complaint that bees died in winter with plenty of food on the opposite side of the hive. They store their food around the brood-nest or cluster, usually forcing the cluster down close to the entrance if fall supplies are abundant. As they eat back it may be towards one side or the other as well as upwards, and it is not unusual to hear the remark that the bees were found on the sunny or sheltered or warm side of the hive. Now, why permit conditions which favor such misfortunes?

When the combs are side to the entrance, stores are still around the cluster, but as they work back, it is away from the side where the stores are being, or have been, consumed, and toward more stores. Where the side entrance is used it is rare to find dead bees on emptied combs with plenty of food on the opposite side of the hive.

Then, when we are working over the hives it is so much nicer to work at the back of the hives, but if the frames run from front to rear it is awkward to handle them from the back, so we stand at the side, where we can, and we cannot do so on the long row plan so often used and pictured. Furthermore, on the end entrance plan we cannot move a comb without disturbing the entrance guard, and if there is a scarcity of nectar and robbers are about we are not helping matters for either ourselves or the bees. With the side entrance, however, the guards are not disturbed until the front comb is removed, the last one we touch if we are going through the hive as when hunting for the queen. This may sound a small matter, but just work with both styles for awhile and it will be found far from small.

In harvest time and hot weather all sorts of plans are resorted to for increasing the size of the entrance, such as putting a rim or blocks between floor and hive-body, but with the side entrance and one inch space below frames we have an entrance 1x18 inches instead of 1x14 inches, as with the end entrance, an increase of no small amount.

To return to the matter of drone-comb. With the side entrance the only comb with drone-cells is kept next to the entrance, where it is used last by the queen and deserted first. Incidentally, at the beginning that frame has only two-thirds of a sheet of foundation put in it. The bees fill the lower part with drone-comb, and cut and refill to their hearts' content and the beekeepers' satisfaction. The top of such frame is painted a distinguishing color, so that it is not misplaced in manipulation.

Consider these factors, but for the present ignore the "warm" and "cold" notions. These have their value, but are as nothing compared to the others.

Providence, R. I.

Price Recommendations—The Chicago Northwestern Beekeepers' Association will send out price recommendations again this season the same as last year. These price letters are free to all members of the above association, and to any beekeeper in the States of Michigan, Indiana and Wisconsin who has ten or more colonies of bees. The Secretary would like to have the names and addresses of every beekeeper in the above States to put on the mailing list. We are depending on membership fees to cover the expense of getting out these letters and would like to enroll as members at least 500 of the leading beekeepers in the above and surrounding States. The beekeepers who received these price recommendations last year profited many thousands of dollars by following the advice given. The first letter will be sent out about July 20. Other letters will follow every eight weeks or so. The idea is not to boost prices but to try and establish a more uniform price for honey. The dues to the above association are $1.50 per year, which also includes membership in the State Association, and a cloth-bound copy of their annual report which also contains the proceedings of the Chicago Northwestern annual meetings. JOHN C. BULL,
Sec.-Treas.
1013 Calumet Ave., Valparaiso, Ind.

Tupelo Gum in Bloom in the Swamps

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THE EDITOR'S VIEWPOINT

Bees in Packages by Mail

At last we have a ruling whereby bees in packages, as well as queens and attendants may be sent through the mails.

It is now up to the shippers of bees to make their containers for bees so strong and unbreakable, as well as unleakable, that there will not be any question of this ruling being reviewed for the good of the service.

Following is an extract of the ruling:

Office of Postmaster General,
Washington, June 18, 1918.

Order No. 1577.

Amend Paragraph 1, Section 476, Postal Laws and Regulations of 1913, by adding thereto the following as sub-paragraph (a).

(a). Honeybees in quantities may be sent in the mails, without insurance or C. O. D. privileges, under the same conditions as are prescribed for queen bees and their attendant bees when delivery can be made to the addresses within a period of five days. If the cages are wooden the material of which they are constructed shall not be less than three-eighths of an inch thick and the saw cuts therein or space between slats shall not be over one-eighth of an inch wide; if wire screen is used for the sides of the cages there shall be two thicknesses of screen separated by slats at least three-eighths of an inch in thickness. The container shall be provided with a suitable handle and no water or liquid food shall be placed therein. Such parcels shall be transported outside of mail bags.

A. S. BURLESON,
Postmaster General.

Transferring Bees by Temporary Anesthesia

In "L'Apicoltura Italiana" Engineer A. Capponi, of San Remo, gives his method of transferring and uniting colonies by putting the bees to sleep with a dose of about 10 gramms of sulphuric ether. The hives or skeps to be transferred are taken early in the morning, before they have begun their flight, placed upon a cloth and the edges of the cloth raised up and tied around the box or skep so the bees may not be able to escape. They are then carried to the house, bottom side up, when they begin to roar from excitement. The liquid is then applied with an atomizer, by cutting a small hole in the cloth. In a minute the hum of the bees lessens. A second and a third hive are then operated upon and by that time the first colony has become completely still. The bees may then be shaken into movable-frame hives. In a little while, if the operation has been well conducted, they come to life again. Bees from different hives may be united in this way without the least fighting on their part.

The claims of Mr. Capponi concerning this method are the following:

1. He kills or injures but a very small number of bees.

2. He avoids stings to himself or others.

3. The work is done in the shortest possible time.

4. He makes colonies of any strength he chooses by mixing together the bees of as many colonies as he desires.

It is necessary to add that this method is employed upon common skeps, or "bugni," as they are called in Italy, that are intended to be killed for their honey by the ignorant owner. Engineer Capponi, who is a progressive beekeeper, saves a large number of bees which are gladly given him by their owners in this way. He relates the astonishment of the "contadini" when they see the bees revive, after a few minutes, in modern frame hives with combs. It gives them an object lesson and causes them to desire to follow the modern ways.

The temporary anesthesia of bees is not without danger. It is quite easy to give them an overdose from which they would never recover. But we live in a time when numerous operations upon human beings would not be possible without chloroform or ether. So, if human beings may be put to sleep temporarily, for an operation, why not bees? However, I can see a number of our old veterans shake their heads with disapproval. They prefer taking the chances of the stings, and so would I.

This is not the first suggestion of anesthesia in the handling of bees. The "Cours D'Apiculture," of Hamet, published some 60 years ago, contains a chapter devoted to this subject. The ingredients recommended by him were puffballs or lycoperdon fungi, nitrate of potash (saltpeter), chloroform, ether, etc.

One of the greatest advantages claimed by him for this anesthesia is the ease with which bees may be united or given strange queens.

The Chicago Northwestern

We call the attention of our readers to the notice of the Chicago Northwestern Association in another column. Both this Association and the Illinois State Association are useful to Illinois beekeepers. Mr. James A. Stone, of Farmingdale, Ill., is Secretary of the State Association, and a remittance to either him or Mr. Bull will secure membership in both.

Observation Hives

"I want to put bees in an 8-frame observation hive. Is this the proper time to do it, and what is the best way? TEXAS."

Similar questions are repeatedly asked concerning observation hives. Many people imagine that an ordinary 8 or 10- frame hive with glass on sides and ends is the proper kind of observation hive, so much so that dealers have found it necessary to keep them for sale. But the only observation—or observing—hive worthy of the name is a hive containing only one comb, with glass on both sides, or several combs one above the other, but all supplied with glass on both sides, so that neither the queen nor the bees can escape from observation. In an 8-frame hive the outside combs only, and perhaps the

ends, may be seen, but those outside combs are the least interesting and the queen only occasionally may be seen upon them. She usually seeks to hide herself as soon as the combs are uncovered and gone to the inside.

With a single-comb observation hive, we can witness the laying of eggs, the nursing of the brood, the building of combs, the rearing of queens and in fact all the performances of the bees and of the queen. If it is arranged so that a little of the comb is built crosswise, so as to have cells attached to the glass, we can watch bees while they are in this comb. In fact, such a hive is an endless source of amusement and all the information about the natural history of the bee is secured there at first hand and the teachings of the naturalist confirmed.

An observation hive may be stocked with bees at any time during the season when bees breed. An 8-frame observation hive, on the other hand, should be stocked with bees only at the time of making divisions or natural swarms.

The single-frame observation hive is supplied with a comb of brood, bees and honey, from some populous colony, usually from a choice queen, so that if we rear queens in it, they may be of some value. If not sufficiently strong in bees, after it has been stocked, it may be made as strong as desired by shaking at its entrance, on a cloth, a number of young workers who have never yet taken flight; they will adopt it as their own, since they have no knowledge of any other place. Young bees are secured from the brood-combs of a populous colony while the old bees are in the field, in the middle of the day.

Even a neglected, hopelessly queenless observation hive may be the source of information, as it often contains drone-laying workers, who will give us the spectacle of an occurrence which some noted beekeepers have doubted. There is no end to the pleasure which may be derived from such a hive, even for visitors who are not in the least informed about the bees. The cost is small and when the summer is ended the comb and its occupants may be united to some other colony.

The Export Market

The American beekeeper owes much of the present favorable market to the foreign demand which cannot be met. According to the "Australasian Beekeeper" there are more than fourteen hundred tons of honey being held in storage at Sydney for shipment abroad. In that far country sufficient shipping space is not available and the honey must wait a favorable opportunity. Australia also has a large supply of wheat which would do much to relieve the present world shortage, if ships were available to transport it to the European markets. Ships and more ships, is the crying need to meet the losses caused by the submarines, and to transport the food necessary to meet the constantly growing demand from overseas. It is apparent that high prices for honey will continue for some time, even though the war should close. However, in Australia, where lack of shipping facilities prevents the beekeepers from making the most of the foreign demand, honey is quoted at from 9 to 12 cents per pound. With the termination of the war and the consequent release of shipping, the prices in different places can be expected to equalize, on a basis of normal freight charges.

Foreign Notes

The Italian editors file away and probably bind their exchanges. Once in a while we read in their magazines something taken out of Gleanings or out of the American Bee Journal of 6 or 8 years ago and it reads to us like new matter and we wonder whether it was really published so long ago. Try to save and bind your bee magazines, and read them over, in a few years. In many cases you will find something useful or interesting which you had forgotten.

The April number of "L'Apicoltore" of Milan celebrates the 80th anniversary of the President of the Italian association, Count Visconti Di Saliceto. We believe the Count is the only representative of an ancient ruling family deeply interested in beekeeping. Beekeepers, as a rule, belong to the middle class, like you and me. We wish Count Visconti many more years of life. We know him to be a true democrat, even though he be a descendant of the rulers of Lombardy.

The same number of "L'Apicoltore" publishes the death knell of the old German Berlepsch system of hives. This system was represented in Italy by the "Sartori" hive. It is being fast replaced with hives of the Langstroth system, under the name of "Dadant-Blatt" hives.

The "Bulletin D'Apiculture" of Switzerland publishes in its April number some studies upon bee paralysis by Dr. G. E. Turesson taken from the Swedish "Bootanisk Tidskrift," translated by Dr. Rotschy. Turesson attributes the invasion of paralysis to the fungi of mold. Without doubt, cool weather, accompanied with dampness is most dangerous for paralysis, May disease, vertigo, or Isle-of-Wight disease.

Now is the time to Requeen

If you are a careful beekeeper, you will have kept record of the amount of honey produced by each colony in your apiary.

Now that the crop is nearly over, you can devote your attention to increasing the prolificness of your queens by breeding new queens from your best colonies and introducing them in the colonies from which mediocre queens have been removed.

The time was, when a beekeeper could breed for honey-producing qualities alone and come nearly hitting it right, but with the prevalence of European foulbrood it is also very important to have a strain of bees which are in part or entirely resistant, and the comman black bee, or its cross, will not usually measure up to the pure Italian race. Unfortunately, the Carniolans and Caucasians have not been given thorough enough trial to determine their resistance.

Possibly you do not want to bother with rearing your own queens, but would rather leave it to the experienced breeder to give you queens from a good honey-producing stock. In any case, it will pay you to requeen wherever your stock is impure or where the queen has a colony very much below the average of your yard.

Leave Enough Honey for Winter

Many beekeepers will be inclined, with the high price of honey, to extract very closely from their bees, either in the hopes that all colonies can gather enough to winter on during the late summer or fall, or in expectation of feeding later on a lot of sugar syrup for winter stores.

It is bad practice at any time to replace good white honey by sugar for wintering. It is doubly bad practice now, since the department has made a ruling whereby beekeepers are only to get half of the sugar they require, and care is to be taken that such beekeepers are not extracting honey and feeding sugar to take its place.

On the Supply Maker's Trail No. 3---The Making of Comb Foundation

By Frank C. Pellett.

IT is an interesting journey to visit the various factories engaged in making bee supplies, for the purpose of getting a glimpse of the operations necessary to supply us with equipment. Most interesting of all is the making of foundation, for in foundation we give the bee something only partly done, which she must finish for herself. In nature, the honeybee never builds her own hive, but she always builds her own combs. She simply takes possession of any suitable shelter, whether it be a hollow tree or a vacant space under the roof or between the walls of a dwelling. Any place where her combs can be built in safety, will do. The making of hives is, then, rather a problem of providing for our own convenience in manipulation, than of saving of labor for the bees. Extractors, containers, smokers—everything else in the way of supplies, are made for the convenience of the beekeeper; foundation alone for lightening the labor of the bees.

In reviewing the wonderful development of beekeeping during the past half century, one is led to wonder whether any great improvement still remains to be brought forward. With the possible exception of the movable frame hive, no single invention has done as much for the beekeeper as foundation. Even yet, many beekeepers fail to appreciate fully the possibilities of its use. It is only after visiting the hundreds of apiaries where the bees are hived on empty frames, and permitted to build combs to suit their fancy, and comparing the results obtained with those secured by the expert beekeeper, as an inspector is compelled to do, that one comes fully to realize what foundation is worth to the honey producer. If the millions of neglected colonies of bees in America could be supplied with full sheets of foundation on which to build their combs, and with plenty of super room—even though no other attention was given aside from what they now receive—this one thing, alone, would add millions of pounds of honey to our product, and go a long way toward relieving the present acute shortage of sugar.

In reading the literature of a half century ago, one is impressed with the great care exercised to save every small piece of good worker comb. There was much cutting and fitting of combs in order to cut out patches of drone cells, and replace them with worker comb. It was a laborious process to secure a large number of good combs in those days and, at best, they bore small resemblance to the perfect combs which we find in a well regulated apiary of the present time. While there are a great variety of uses to which beeswax is put in the manufacture of various commercial produces, the beekeeper is his own best customer. It is probable that more wax is now purchased for the manufacture of comb foundation than for any other purpose.

It was a happy thought that suggested the impression of the cell base on a thin sheet of wax, but many years of experience were necessary to develop to perfection a machine which made the production of foundation, on a commercial scale, a possibility. In the May (1917) number of the American Bee Journal the editor told something of the history of this enterprise, so it is not necessary to repeat it here. However, we note that it was not until 1875 that the first printed wax was offered for sale in New York. It was several years later that a uniform product of good quality appeared in the market, and then began the slow process of educating the mass of beekeepers to the advantages of it. The well-informed beekeepers were quick to see the possibilities of its use, even at the high price for which it sold at the first. Like any new invention, its value had to be demonstrated before coming into general use. Now we rarely find a beekeeper of experience who would allow the bees to draw new combs without full sheets of foundation. The extra honey cost to the bees in building the combs amounts to more than the cost of the foundation, to say nothing of the advantage of the straight combs composed of worker cells, which are so important to the success of the beekeeper.

For a time it was common practice among beekeepers to buy a small mill and make their foundation at home. While it is quite possible to make a fairly good grade of foundation on these hand mills, it is slow and tedious work, and there are many imperfect sheets. The big mills now make it at so low a price that few beekeepers care to bother with a hand mill. Usually they ship their wax to a commercial establishment and have it made into foundation, at a low cost.

When foundation is made on a hand mill, it is necessary to dip a board or sheet of metal in the melted wax, then run the sheet of wax which is peeled from its surface between the rollers bearing the impression. At the foundation factories the wax is first sheeted by machinery, and made into rolls which are later run through the mills. The different operations are thus necessary to make the finished article, and each of these processes requires a different machine.

Sheeting the wax so that it can be fed through the mill in a long belt-like roll, is an ingenious operation. A large quantity of beeswax is melted, for nothing but pure beeswax enters into the manufacture of comb-foundation. This melted wax is held in a large trough, in connection with the sheeting machine. A water-cooled metal roll turns in the hot wax. Since it is cooler than the wax, it is instantly coated with it. It turns against a knife that peels off the coat of wax and forces it through a narrow slot. By the time it has passed through the slot it is cool enough to work nicely, like the taffy which we delighted to pull in our childhood days. Beeswax is very flexible at blood heat. The slot through which it is forced is long and narrow, thus bringing the wax through in the shape of a thin sheet, which is fastened to a wood roll that turns slowly and winds up the wax much like thread is wound on a spool. When about 30 pounds of the wax has been thus wound it is cut off and laid aside and a new spool started. The width of the sheet is adjusted to the size of finished foundation desired.

Our second picture shows the stock-room where a large quantity of sheeted wax is ready to go to the mill to receive the impression. The first picture shows the sheeting machines winding up the wax. Large quantities of wax are sheeted in advance of needs of the mill, since it can be easily stored and cared for in this form.

Sheeting the wax—The first stage of making foundation

The final process is rather simple. The roll of wax is threaded, so that it runs between two metal rolls as it unwinds. The rolls are cut to reproduce the impression of the base of the cells the size and shape of worker comb. As it leaves the rolls it is automatically cut into the proper lengths which the trade demands. As fast as the sheets are cut they are sorted and packed by young ladies, who become very expert. Paper is placed between the sheets of foundation to prevent them from sticking together or being otherwise damaged.

Beeswax is sensitive to changes in temperature. When the wax becomes warm it gets soft and the impression might easily be lost. In extreme cold it becomes so brittle that the sheets are easily broken. When packed in paper boxes with paper between the sheets of foundation, it is safe from all extremes of weather, is free from dust, and may be kept for years without damage.

Glimpses of Southern Beekeeping---Boneset

By Jos. S. Scott

EVERYBODY knows about a surplus flow from alfalfa, clover, orange, basswood, etc., but does anyone know of a surplus flow from something unusual? Let's have something out of the ordinary ruts. I'll start the ball rolling with a flow from boneset.

I have been a beekeeper for seven or eight years and during that time there was boneset here, but I never noticed that the bees worked on it; why? Well, I think that the main reason was that my crop of saleable honey is over with by the 15th of May, when there is no more for that year except a light flow in July from summer titi and honeydew. This is left for them to winter on. As the bees can fly most any day and every day in the year, it is seldom that they have to stay in the hive over four days in the winter. So they winter well on the honeydew mixture.

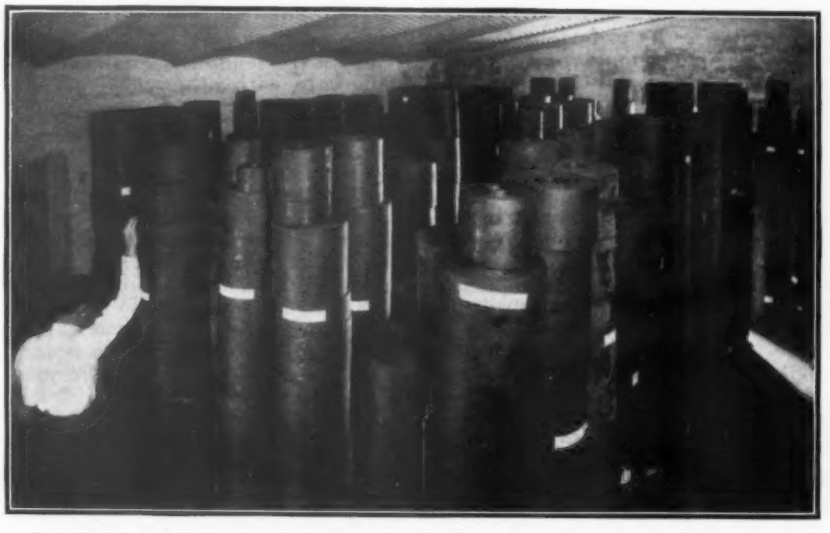
This year there was a lot of velvet beans planted near my bees and I knew that they would get something in August from them, so I prepared to make some increase and requeen all of them during this flow. The flow was heavier and longer than I expected and these young queens went to laying like it was spring, and I never saw a larger lot of bees just right for gathering honey when the boneset began to bloom. I thought at the time that it was goldenrod, but was doubtful, as I have never seen any honey from goldenrod here; so after they had been on it for several days I followed them to the woods, and they were on boneset. They worked furiously for about ten days and gave me a surplus of at least 20 pounds from this, when we had a terrible wind and rain storm that kept up for at least ten days, at the end of which the boneset had been washed and beaten to pieces. I think that with a week's more flow they would have given me at least a super full of pure boneset honey.

I think the velvet bean flow, together with the young queens, put them in a position to gather this surplus. Heretofore they had dwindled down after July so that they were in no condition to gather a surplus, if there had been any. Was it that, or was it that this was a year that the boneset yielded? I am waiting anxiously for this fall to come to try it again.

The honey is of good body, a light amber color, with a very strong flavor. The honey when first sealed is so strong that one cannot eat it. After a time most of this strong taste disappears.

The picture in the September, 1917, issue of the American Bee Journal is a beautiful picture of the species of boneset that yielded me this honey.

Mt. Pleasant, Ala.



Thirty Thousand pounds of Sheeted Wax in stock-room ready for the mill

Girls sorting and packing the foundation as it comes from the mill

The Maintenance of Colonies From the Close of the Honey Flow One Year Until Its Beginning the Next

By Geo. S. Demuth, Apicultural Assistant, Bureau of Entomology

THE business of honey production seemingly consists of caring for innumerable details, each of which, to be effective, must receive attention at exactly the right time. The beginner is always overwhelmed by this great mass of details, and even some who are more advanced in the work may occasionally lose their way temporarily in the struggle with many little things that make up beekeeping.

It is well, when struggling through a maze of details, to look up occasionally to get a more definite idea of the purpose of each of the details of our season's work, in order that we may weigh them and thus find their respective value as bearing upon the ultimate purpose of all our manipulations. When we can see each of these details in its relation to all the others and can trace out just what part each one plays toward the ultimate purpose of the beekeeper, we shall probably revise our conception of the relative importance of the many things we attempt to do in the apiary.

Two phases of the work—When examined with this in view, we find

that each and every one of the multitude of things which we attempt to do during the year's work among the bees falls under one or the other of two great groups of activities. First we have one group of manipulations scattered throughout the greater portion of the year, each of which bears directly or indirectly upon a single purpose—to have, at the beginning of the main honey-flow, all colonies strong in energetic workers of a good strain.

Strong colonies at just the right time, however, do not alone insure the best results in honey that the location and season may afford, since strong colonies may divide themselves by swarming into two or more medium or weak colonies, thus defeating to a great extent the purpose toward which the beekeeper has directed his efforts during almost a year of preparation. Even if a division of the working force is prevented during this critical period—the honey-flow—other conditions, such as lack of suitable storage space for incoming nectar, crowded brood-chamber or insufficient ventilation, may cause the workers to loaf during the height of the honey-flow and in this way defeat the purpose of the beekeeper. The second great group of manipulations of the apiary, therefore, includes all those having for their purpose the providing of conditions tending to hold the gathering and storing instinct of the bees dominant and the prevention of a division of the working force of the colonies during the main honey-flow.

With a given equipment in a given locality during a given season, the resulting honey crop is determined by the degree of thoroughness and promptness with which these two things are done. Any manipulation which does not bear directly or remotely upon one or the other of these two purposes is something aside from honey-production, while those manipulations affecting to the greatest degree these two purposes are obviously of greatest importance.

Briefly stated, then, honey-production consists of doing two things—1st, providing workers of a good strain for the harvest, and, 2nd, using these workers to advantage during the harvest. The dividing line between these two phases is most clearly defined in localities having a single short honey-flow from which all, or practically all, the surplus honey is secured.

The Preparation Period—It is my purpose to confine my remarks to the first of these two grand divisions of the work of honey-production—providing conditions which result in strong colonies at the beginning of the honey-flow. In doing so, I am not unmindful of the more tempting array of material in the other group which has to do with the greatest activity of the season, around which is centered the greater portion of our enthusiasm in beekeeping. Neither would I have you infer that these more interesting things are of secondary importance in honey-production. They form, in fact, the superstructure, and to most of us are the very essence of beekeeping. But the first group is the foundation, without which the superstructure cannot exist.

The tendency to neglect details of the lowly foundation while enjoying the structure above is a sufficient reason for a careful consideration of those factors which constitute the foundation of the honey crop.

Interest—You are well aware of the fact that our interest in the activities of the honeybee, especially during this one happy and busy month—the honey-flow—is the chief stimulus that impels us to do our part of the work and that the promptness and thoroughness with which we do it is largely determined by the intensity of this interest. The beekeeper, during a good honey-flow, when the bees are crowding him mercilessly, works from early morning until far into the night and knows no fatigue until he relaxes for his night's rest. Even then the night, instead of appealing to him as a time for rest, seems only to be another obstacle thrown in the way to prevent the doing of the many things in which he is so tremendously interested. At such times the beekeeper needs no other stimulation to better effort, for his intoxication is then complete. It is fortunate for the industry that beekeeping furnishes, at least at long intervals, such a tremendous stimulus, but as is the case with other powerful stimulants, the relapse between times is the dangerous corollary. At the close of the honey-flow, bees and beekeeper slow down at the same time and the intensity of interest at other seasons seems to be inversely as the square of the distance (in time units) from the honey-flow or peak of the season. This slump of interest in the bees that comes with the cessation of the honey-flow and the radical transfer of activities from the apiary to the honey-house and to the market, often works greatly to the disadvantage of the beekeeper. It sometimes even results in many colonies being permitted to approach the verge of starvation after the honey crop has been removed from the hives. In such colonies brood-rearing is suspended during the time when eggs should be laid to produce bees that make up the winter colony.

In addition to the seasonal fluctuation of the intensity of interest, there is the sagging of interest during poor seasons. After a series of poor and indifferent seasons, the beekeeper's interest may sag so low that when a good season occurs he is not prepared to take advantage of the opportunity. This is the basis for the saying among beekeepers that the best seasons usually "catch" them with the poorest preparation in number and strength of colonies.

Beekeeping is a peculiar industry in that the real business of the apiary, actual honey production, is confined to but a few weeks of the entire year, while the preparation for this supreme effort is scattered throughout the remaining ten or eleven months. In much of this preparation there is considerable latitude as to the time for any particular manipulation and the limit of time beyond which the manipulation is no longer effective is not always clearly defined. In addition to this, there is an annual shifting of these limits and some seasons are so favorable that the colonies need but little if any help from the beekeeper from the close of the main honey-flow of one season to the beginning of the next. In other words, the bees are so nearly able to take care of themselves during the entire non-producing portion of the year that there is danger that the beekeeper will depend too much upon their ability to do so.

The difference between the highly successful and the less successful beekeeper is probably not so much in the greater skill of the one as in the greater degree of interest sustained during the ten or eleven months of non-production for, if the interest is sustained, skill will be developed. The intense interest and enthusiasm of the beekeeper during the honey-flow cannot retrieve a situation lost during the period of preparation. If bees to gather and store the crop are not present in great numbers and ready for business when the honey-flow comes, no highly refined methods or complex apparatus can take their place. One of the great needs of the industry is, therefore, some stimulus to sustain the beekeeper's interest and thus induce him to systematize and simplify his manipulations during the eleven months of preparation.

Three Periods in the Preparation

It is my purpose to call attention to the few essential things to be done during the ten or eleven months of preparation for the honey-flow and to suggest the advisability of working out some system by which none of them shall be omitted. An analysis of the requirements of a colony of bees from the close of the honey-flow of one year until the beginning of the honey-flow of the next, on the basis of purpose on the part of the beekeeper, reveals three well defined periods.

1st. Production of Bees for the Winter Colony.—There is a date some time during the latter part of summer which marks the dividing line in brood-rearing between that brood, the resulting bees of which die before or early in winter, and that which results in bees that make up the winter colony. This date, of course, varies in various localities and with different seasons in the same locality, and is greatly influenced by conditions governing the amount of energy that the bees expend before winter begins. In order to have a colony for winter, therefore, there must be some brood-rearing after this date. Thousands of colonies are lost annually because brood-rearing was not sufficient to replace the wastage of bee-life during late summer and early fall. Since we cannot lose in winter colonies which we did not have the previous fall, it is an error to charge such losses to wintering. The workers

that make up the colony at the beginning of the broodless period must be young and vigorous either in the sense of their age in days or in the amount of energy they have already expended, or in both.

The central idea, therefore, of this first course in the construction of the foundation for next season's honey crop is the production of bees whose lives are to span the winter broodless period.

2nd. Conservation of Energy — During the broodless period, the length of life of the worker bees must be greatly prolonged if the colony survives. Instead of the accepted six weeks' normal span of life under active conditions, the energy of the bees must be conserved that they will live six months or more. The existence of the colony during the winter in the North, therefore, is dependent upon conditions enabling the bees to live slowly enough to last until more favorable weather conditions permit their replacement with young. The so-called spring loss or spring dwindling is usually, properly speaking, a winter loss, and the weakened condition in the spring of colonies that were normal in strength the previous fall must be charged to winter loss. The central idea in that which we call wintering is the conservation of the energy of the bees.

3d. Increase in Population—Some time in the spring, while still anxious that bee energy shall not be wasted, the beekeeper desires that it shall be spent judiciously in brood-rearing. Here, as during the previous period, the instincts of the bees are in harmony with the desire of the beekeeper. From this time until the beginning of the honey-flow, the primary purpose of the beekeeper is a tremendous increase in the population of each colony, so that it shall reach the possible maximum about the time the honey-flow begins. If there is sufficient time previous to the honey-flow, as in localities where buckwheat furnishes the main crop, he may even increase the number of colonies, thus producing more workers for the harvest. This being the final lap in the preparation for the honey-flow, failures here are more noticeable, but not less destructive to profits, than are the failures during the other two periods.

Three Fundamental Requirements

During each of these periods numerous environmental factors, such as weather conditions or presence or absence of minor honey-flows, exert influences favorable or unfavorable to the ultimate purpose of the beekeeper. In their battle against the many unfavorable conditions, there are but three fundamental requirements on the part of the bees—food, protection and room for expansion during periods of greater activity. In other words, if a normal colony of bees is never permitted to run short of stores, if it is at all times well protected, especially against extremes of temperature, and if brood-rearing is not at any time checked (when brood is desirable) by a lack of room, such a colony, barring accidents, will be prepared for the honey-flow in time to take advantage of it. Aside from providing and improving his equipment or controlling disease, the work of the beekeeper consists only in supplying any deficiency that may occur in food, protection and room. These are but primitive facts in beekeeping, but they are basic and are exactly the factors to the neglect of which may be traced most of the failure to have colonies at the beginning of instead at the close of the honey-flow. All the details of work, not concerned with equipment or disease, during this entire period, are concerned only with stores, protection or room for expansion of colony activity.

During the three periods into which the entire period of preparation is naturally divided, the emphasis on these fundamental requirements changes. Food, of course, is prominent as a requirement during each of the periods, with additional emphasis on quality during the winter; protection has its greatest emphasis during the winter and early spring, and room for the expansion of the brood-nest is primarily a spring requirement.

(To be concluded n September number)

Small Helps to Canning Efficiency

By Mary G. Phillips

DOES your back ache, and are you tired all over after canning today? Then sit down in the most comfortable chair on the porch and cool off, while you review the situation, and reflect on the numbers of tired women, more than ever before in our history, who, like you, sit down at the end of the day with a sigh of relief that one more batch of jars is filled and put away. Everywhere, north, east, south, west, they pull the shoes from their weary feet at night and drop into bed spent, but happy. The wives of farmers have the longest and hardest days, probably, for in addition to doing the regular housework, they generally have several extra men to feed, help with the milking or feeding of chickens and stock, and are frequently handicapped by inconveniences like having to pump all the water, keep fire going in a wood stove, and in addition—the canning.

But it is not only the farmers' wives whose daily strength used in canning is adding to the military strength of our cause. There are the women of suburban towns who have been used to having a man for the heavier part of gardening, and a maid for the heavier housework. Now that men for day's work at gardening have virtually disappeared, and husbands are too busy with their part of the war work to be available, these women have spaded and planted the gardens themselves. With the kitchen help problem likewise acute, they are also doing their own housework and laundering. To women unused to these tasks the burden is heavy, but with the same grit as the farmers' wives are showing, and with the determination not to be outdone by the noble French and English women, they have made themselves equal to the task, and besides, add canning to the day's work. As for the women of the city, most of them who can leave home for even part of the day, are engaged in filling the vacant places left by men in business. But when their day at the office is done and the apartment is cleaned, and meals are over, these business women, like the rest of us, can!

Now, nine out of ten of the canning army have plunged into the extra work eagerly and willingly, but without first planning for it adequately. The cherries were ripe before you knew it, so, although you meant to have every bit of equipment necessary this year, when time is such a precious commodity, you did expect to finish housecleaning first, and get winter clothes packed away, and make yourself a couple of new morning dresses, but—the cherries hung red upon the trees and you dropped everything else in order not to lose one of them to the robins. It was nip and tuck, but with the children's help in picking and pitting (you did mean to buy a stoner this year), and by keeping at it day after day, you managed to salvage fifty quarts of potential pies, now safely placed on your top shelf. Then you turned again to finish the cleaning and the half-made dress, but—peas came on, and then you knew you were in for it, and the rest of the summer would see you with some canning to be done every day.

Well, it is too late now to go back to the beginning of the season, but there are still many vegetables and fruits to be preserved for winter, so let me ask you as you rest for a few minutes, to think of your equipment and the arrangement of your kitchen. "Disorganization is the main difficulty with housework," says one observing man, and he is partly right. We do not plan, systematize and simplify sufficiently. It is too late to reorganize your entire kitchen this season, but there may be many little steps toward kitchen efficiency which you could make tomorrow morning which will make your day's work shorter and lighter.

For instance, while canning, one is constantly washing her hands. Where does your hand towel hang—close beside the sink, or behind the door at the other side of the kitchen, so that you have to take a dozen steps to wipe your hands, and a dozen steps back to your work?

Have you but one sharp paring knife, generally referred to as "the" knife, which Johnny persists in borrowing to cut string, so that when you miss the knife just as you are about to prepare your vegetables, you have first to find Johnny in order to locate it? Two or three such small knives, involving an outlay of about 75 cents, save much wear and tear.

Again—have you a lifter for hot jars, or do you burn your fingers and lose your temper trying to lift the jars from scalding water with a spoon or cloth or what not? Such a

lifter looks like two forks arranged scissors-fashion and costs 25 cents.

Once more—have you a wide-mouth funnel for filling jars (cost, 10 cents), or do you waste material and make work for yourself by attempting to fill jars without?

Do you follow the government bulletin advice and blanch your vegetables in cheese-cloth? If you have thought it too much bother to hunt up the cheese-cloth, or thought it "just as easy" some other way, try the cloth, just to see how great a time saver it is. Following the government bulletin is one sure way to succeed, and the woman who thinks she will save time by skipping what to her mind seems a trifling operation need not be surprised when she "has bad luck" with her canned peas or corn.

Have you a kitchen table on casters that you can easily pull close to the stove? If you have you know what a comfort it is to lift filled jars directly from the stove to the table with no steps between.

Have you thought carefully of your kitchen arrangements, or is the refrigerator, sink, stove, table shelves arrangement hit-or-miss? It is not a difficult matter to have the furniture so placed that you do not weave backward and forward over your kitchen floor a hundred times during one operation.

Do these seem like little things? So are minutes, and yet they are of great importance in this time of crisis. Some super-efficient housekeepers may say, "Why, of course I have all those time-savers, and do all those things!" but the majority of housekeepers skimp on kitchen utensils and do not think sufficiently to save themselves. We need the utmost strength of every woman of the nation and not an ounce of it should be wasted any more than food should be wasted.

Washington, D. C.

Parthenogenesis Among the Solitary Bees

By John H. Lovell.

IN the May number of the American Bee Journal the editor gives a very interesting criticism of Fabre's views on parthenogenesis in the honeybee. It is the more surprising that Fabre should so positively deny Dzierzon's theory, since he himself has described parthenogenesis in Halictus, a genus of solitary bees. As among the bumblebees, the sexes mate in the fall, the males soon die, but the impregnated females hibernate during the winter. With the return of warm weather in the spring these prospective mothers dig burrows in the ground which are 5 or 6 inches in depth and have several short lateral branches, in each of which and in the lower end of the tunnel a cell is built. In each cell a ball of bee-bread, about the size of a pea or smaller, is stored and an egg is laid on this little mass of food. The composition of the bee-bread is essentially the same as that of the honeybee. From these eggs come only females; there are no males in the first generation. In like manner the queen bumblebee's eggs produce only workers in the spring. Each burrow of Halictus thus contains 8 or 10 females, sisters, since they are progeny of one mother. Beginning with the cell in which she was born, each female digs a new group of cells, connected with the main tunnel. Although there are then no males in existence, each of these virgin sisters provides her cell with a ball of bee-bread, and lays eggs, which by parthenogenesis give birth to both males and females—the second generation.

"To sum up," says Fabre, "judging by the three species that form the subject of my investigations, the Halicti have two generations a year, one in the spring, issuing from the mothers who have lived through the winter after being fecundated in the autumn, the other in the summer, the fruit of parthenogenesis, that is to say, of reproduction by the powers of the mother alone. Of the union of the two sexes, females alone are born; parthenogenesis gives birth at the same time to females and males."

If in Halictus unimpregnated females can lay eggs which give birth to both males and females, it is less surprising to learn that in some instances there are laying workers of the honeybee which can also produce both drones and females. There was a time in the history of the honeybee when there were no workers, but only males and females. The virgins of this period, as in Halictus, may have been able to lay eggs, which gave birth to both sexes. With the evolution of the worker the egg-laying power has been largely lost by this caste. The ability to produce females may have disappeared more completely than that of producing drones; but still manifest itself under special circumstances.

Since Fabre admits parthenogenesis in Halictus, why should he so unhesitatingly deny it in the case of the honeybee? As the editor of the American Bee Journal has shown, this was partly due to his natural dislike of the Germans, partly to his neglect to study the honeybee, which is a cause for some surprise, and partly, perhaps, to the fact that he himself discovered parthenogenesis in Halictus.

It is usually the egg, which develops into a new individual without fertilization, since it is larger and contains more food material; but theoretically there is no reason why the sperms may not also do so, and it is said that in certain of the brown sea-weeds (Ectocarpus) the sperms, which are unusually large, do develop into new plants of small size. Parthenogenesis can excite little surprise, indeed it might well be more common. The egg and the sperm are only specialized spores, and parthenogenesis seems to be the retention of the primitive power to multiply sexually by means of spores. A spore is a single cell which can produce a new individual. Many of the lower plants, as among the sea-weeds and fungi, multiply wholly by spores. The union of two spores is a sexual act. There are algae in which the larger spores grow directly into new plants, while the smaller unite, or conjugate, before developing into new individuals. There are also algae in which spores of the same size may produce new plants sometimes independently and sometimes by conjugation. The writer fully agrees with the editor of the Journal that parthenogenesis in the honeybee is a well-established fact.

Waldboro, Maine.

"A Mountain of Honey"

By Lue Sites.

TOGETHER with an old prospector named Jabe Gates, I was running a tunnel into the side of the mountain above Hell Hole, upon the head waters of the American River, in Eldorado County, California, hunting for copper, as my partner had found copper floating down the mountain and had traced it up to an almost perpendicular ledge of rock about midway between the river and the peak of the mountain. We were about three thousand feet above the river and at least that far from the Red Cliffs, which were jagged rocks and cliffs at the summit of the mountain. So we concluded to run a tunnel straight into the heart of the hill and see if we could tap the copper vein, which Gates said must be deposited there. We worked three summers and had run the tunnel in about eight hundred feet (we could not work in the winter, for this is in the high Sierras, about seven or eight thousand feet elevation, and the snow piles mighty high), and blasting a good deal of the way, as the rock was hard in places, but soft in others.

About 1 o'clock one day we came back into the tunnel and the shots had bursted down the whole face of the drift, and as we commenced shoveling it away we could see a sticky mass that looked like molasses. As we shoveled and cleared out the mass we could see great slathers of comb. We took a bar and broke down the rock the full width of the tunnel and there we were with a solid mass of honey in the comb full width of our tunnel. It was as black as any black strap molasses you ever saw, and we could see that it was a regular cavern, as the wall was well defined.

We took a candle box and a mining pan full of the stuff to the cabin, and as we were low on sugar and didn't have any syrup on hand, we concluded to try some on pancakes for supper. We tried it out, and if you ever heard of two sick miners, we were the ones, for in less than half an hour later we were writhing in pretty hard pains, and it wasn't until nearly morning that we concluded to live.

Of course, it made us sore at the discovery we'd made. But in a few days we tackled the job again and ran an upper cut about fifty feet alongside the mass, intending to run ahead again over the lower tunnel, but this mass of honey and comb was

just the same above as below. We cross-cut in two directions, but ran right into this cavern full of honey in both cross-cuts; besides, the work was getting on our nerves, being all sticky, and the smell wasn't the most pleasant. As I said, it was getting on in the fall and we were short of grub, so we determined to go out and get venison, as we needed meat, so we went up to the top of the mountain, and near the cliffs we got a four-pronger. We were right there at the Red Cliffs, so we concluded to explore a little. Strapping our guns to us, we climbed up through the cliffs. It was tedious climbing, as the rocks were sharp and jagged. Finally we got up, say about a hundred feet from the top of the main cliff, and all of a sudden we could see the bees flying around a sort of opening, and although it was well along in the afternoon, thousands of bees were flying in and out of this hole in the rock.

As we stood there watching, Jabe tossed a rock up toward the opening. It was the most foolish thing he could have done. Immediately the bees came for us, and in our haste to get down we ran right onto a couple of rattlesnakes, and while the rattlers didn't get us the bees did. When we finally got down to the ground again we both were a sorry mess, and the blooming bees were still after us.

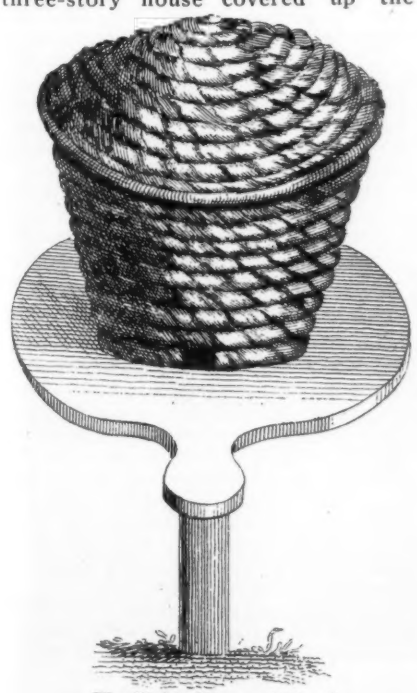
I should judge from the top of those cliffs to the mouth of our tunnel the distance was easy half a mile, and it was almost straight down. We figured it out that the bees had gone into that hole in the rock maybe a few hundred years before and went to the very bottom and built up from there, and, as near as Jabe could figure it, there must have been at least a million tons of honey deposited in the big cavern.

That winter a big snow slide came down and boulders bigger than a three-story house covered up the tunnel, cabin and all. Jabe died that winter, down in the city, and I was discouraged and broke. I went back the following summer to see about the claim, but finding the whole thing covered up, abandoned it for good.

San Francisco, Calif.

Vouched for by Mr. E. F. Lane.

Mr. Sites is evidently trying to get ahead of the stories told by our friend Mr. Baldensperger in a previous issue. Let us not stop at that. since honey has been recognized as the "ambrosia" or food of the gods, and since there is also a "milky way," is it not quite probable that some of the stars which we see in the heavens are entirely composed of honey? They say that there are no lawyers in heaven, but beekeepers are surely found there.—Editor.



The Huish Hive and Stand

The Evolution of the Beehive

By the Editor.

"Editor Dadant: An extract from the diary of John Evelyn, who lived, during the times of King Charles I, O. Cromwell, Charles II and James II, at Sayes Court, near London, may interest your many readers, who have read articles on 'The Evolution of the Beehive.' Evelyn wrote, July 13, 1654:

"'We all dined at that most obliging and universally curious Dr. Wilkins's, at Wadham College, Oxford. He was the first who showed me the transparent apiaries, which he built like castles and palaces, and so ordered them one upon another as to take the honey without destroying the bees. These were adorned with a variety of dials, little statues, vanes, etc., and he was so abundantly civil, finding me pleased with them, to present me with one of the hives which he had empty, and which I afterwards had in my garden at Sayes Court, where it continued many years, and which his Majesty came on purpose to see and contemplate with much satisfaction.'

"From this brief account, we are justified in assuming there were movable frames in this observation hive. Evelyn throughout his life kept bees and took more than a passing interest in their work, and the pasture needed for their upkeep. It is interesting to note that Charles II, with other people of 'quality' could find sufficient interest in the bees to contemplate with much satisfaction their habits, on more than one occasion. WILLIAMS HUGH,

"Victoria B. C."

The reading of old bee books is fascinating, but above all things it shows us how circumspect one must be, not to make assertions which later may prove fallacious if not even ridiculous.

In order to discuss "the evolution of the beehive" it is necessary to search the old masters' works, read their arguments in favor of such or such a system and study their descriptions.

After reading Della Rocca (1790) and Huber (1814), I took up Huish (1815), a well posted English author and beekeeper. He was a great critic and took particular pains to ridicule the discoveries and teachings of Huber, denying Huber's assertion that the large number of drones which bees rear is intended to enable the queen to find one more readily in her wedding flight. Huber discovered that the queen went out to mate and mated "on the wing." He showed that a single mating was sufficient to fecundate her "for 2 years, at least." Huish wrote:

"How inconsistent with reason is such a system! and how contradictory to the daily experience of the attentive apiarian! It is an acknowledged fact that the queen never leaves the hive on any account whatsoever."

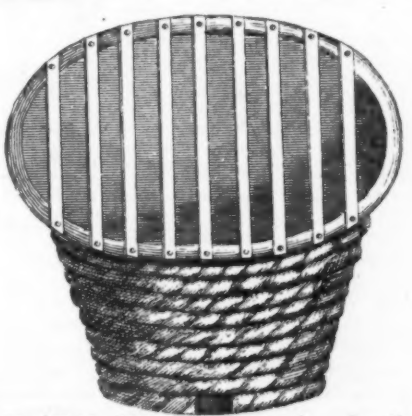
Huish also denied Huber's discovery that comb was made by digesting honey. He wrote:

"Mr. Huber's experiments appeared conclusive to the majority of foreign apiarians. * * * These discoveries can only excite a smile on the countenance of the chemist and the naturalist. * * * "

As Huish also criticises Della Rocca, one would hardly expect him to borrow from him. So my astonishment was great when I found passages of several pages translated, verbatim, from the latter's work without giving him credit. For instance, Della Rocca, speaking of the sting of the queen writes:

"The sting of the mother bee is bent, and it penetrates deeply, writes M. Ducarne. It is true that they rarely use it, but they do sometimes, and it makes a wound in proportion to its size. La Grenee says that he has held very active queens in his hands, for a long time without the honor of being stung. As to myself, I have experienced that honor, while holding a queen in my hand, after pressing her a little; in truth the sting was slight and not very painful."

This entire passage, as well as a page before and after was inserted by Huish, in his book, page 30, without giving even a hint that it was Della Rocca and not himself who had managed to be stung by a queen. For shame, Mr. Huish, was this ever noticed by some of your readers be-



The Huish Hive had only top-bars for the combs, and was called a movable-comb hive. The combs had to be cut loose from the walls at every inspection.

fore now? It is a little over 100 years since you wrote it.

I am not writing this just for the pleasure of putting on the witness stand a man who has probably been dead 50 years. It is the Huish hive which I propose to describe. It was in the shape of an inverted straw skep, but with "bars" on which the bees built their combs. The flaring shape of the hive enabled the apiarist to remove the combs readily after they had been cut away from the side walls. This was not Huish's original invention, for the Greek beekeepers were at that time using a similar hive.

My readers, accustomed as they are to our modern hives, will wonder at the possibility of doing any work with such top-bar hives. Yet the great Dzierzon, who was so very accurate, never used anything but top-bars, and at each visit had to separate the combs from the hive walls. Neither were his hives built flaring, but perpendicular, so the work of removing the combs for examination was undoubtedly a great task.

It was only after Dzierzon's discoveries that several apiarists devised movable frames. Neither were they as practical as the present hives. Debeauvoys made his frames to fit snugly in the hive, at first, and the bees glued them fast, so they were practically immovable. Berlepsch used spaces around them but did not make an open ceiling to the hive, so that the combs had to be drawn out from the rear, where a door permitted the removal. Hives of this kind are still in use in many parts of Germany.

All this ancient history enables us to see what a great step forward was made when Langstroth invented the movable frame with the bee space all around, below and above, with a removable top, so that the combs could be taken out without the use of doors, hinges, drawers, and other complicated contrivances.

The time had evidently come for the complete evolution of the bee hive, for very shortly after the Langstroth invention, similar hives were devised by different apiarists. In this country, A. F. Moon of Rome, Ga., made a claim to having devised a similar hive without having seen the Langstroth invention. In France, L'Abbe Sagot, a most excellent apiarist and a modest man, made an almost exact duplicate of the Langstroth hive without having even seen it.

A Fuzz-Bearing Plant

I see in the May number, page 170 "Poisoned with Propolis," by "Missouri."

I think that his bees have gathered nectar, pollen or propolis from poisonous plants such as poison ivy, poison oak or fuzz-bearing plants such as goldenrod and fireweed, which grow in some years abundantly, are very irritable to the throat and nose and make one feel like having a cold or catarrh.

There are many other fuzz-bearing plants which are irritable and from which bees gather pollen and propolis. Enclosed is a so-called fireweed which grows abundantly this year and annoyed my throat.

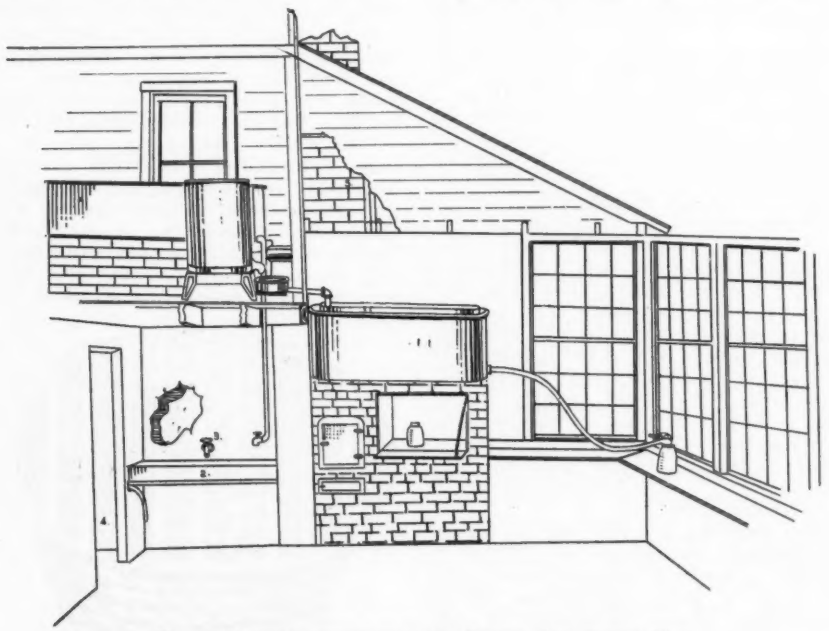
B. SCHUNCHEL.

The specimen enclosed, a very hairy, slim stem, with orange-colored flowers on a spike, was referred to Dr. Pammel, who reports as follows:

The plant is *Amsinckia intermedia.* I might say that this plant has been identified for me by W. A. Setchell of the University of California. The note from your correspondent is of interest. Many of the plants of the Borage family are excellent honey plants, for instance the common Borage *(Borago officinalis)*; some of the plants of this family do not, however, furnish nectar. Toxic substances are found in some members of this family, for instance, the European heliotrope, which has a volatile poisonous alkaloid, and another Borage, hound's tongue, contains a poisonous alkaloid.

I doubt very much whether the symptoms described by Mr. Schunchel can be attributed to pollen from this plant. I am inclined to think the irritation is caused by the peculiar hairs on the plant, as quite a number of the plants of this family are irritant and in some cases the symptoms are similar to those described by your correspondent.

Ames, Iowa.



HONEY HEATING OUTFIT OF G. M. RANUM, MT. HOREB, WIS.

The tank behind the extractor can is a combined uncapping box, capping melter and comb heater for warming combs when otherwise too cool for extracting. It sets on a brick fireplace and has water-jacket like honey-tank. Pipe leading to lower room, which is partly underground, has faucet to draw hot water into sink and for washing jars. Faucet 3 draws cold water from reservoir, represented by opening cut in stone wall. Reservoir contains soft water caught from roof of building, and a pitcher-spout pump in upper room draws from same for filling jacket in either tank. We want soft water for washing jars, and they are dried by sun heat in large windows. Pipe leading to honey-tank connects with strainer under faucet of extractor.

Liquefying and Packing Honey

By G. M. Ranum.

Read at Wisconsin State Beekeepers' Convention, 1917.

THE apparatus I am about to describe is the outgrowth of a need felt for some convenient way of heating honey, not only for liquefying purposes but for rapidity in bottling and also for prevention of granulation.

We had long since concluded that the only proper way to sell extracted honey was in the liquid state, and had been making a practice of taking back from the stores any of our honey that had granulated, and replacing it with liquid honey. In fact, we insisted on this change, believing that a uniform appearing product would sell better and satisfy better than one that looks different each time you see it, as will honey when in various stages of granulation. Besides, we were tired of explaining the why and wherefore of honey getting white and hard, and never did quite fancy using a label with an apology attached.

This thing of keeping the stores supplied with liquid honey in nice condition made us no small amount of trouble. We tried various ways of heating the jars, and soon decided that dry heat was better than placing the jars in water, as by the latter plan one or more of the jars might crack and the contents leak out, making a bad mess of the whole thing. And the labels would always be damaged so as to necessitate relabeling We used to place the jars on the back of the kitchen stove, or in the oven, with the door partly open.

This plan worked all right for heating small quantities, but as the business grew the women folks began to grumble and complain.

My outfit now consists of a brick arch or fireplace built on the principle of a cookstove or kitchen range, with a flat, open top for supporting the honey tank directly over the fire

and an oven made of heavy sheet iron, built in, with a flue running all around it.

This oven is used for heating honey in jars or cans at the same time that the honey in tank above is being heated.

The tank is double, i. e., one tank inside of another, with water between. The outer tank is of galvanized iron—an ordinary stock watering tank—while the inner one is made of vat tin, and costs considerably more.

The inner tank holds about 1,200 pounds of honey and the heating and bottling of this quantity makes a nice day's work, including rinsing of jars, putting on covers after filling, etc.

Of course, I have in mind two or three children or a couple of women to help with the job.

We use wood for fuel and each heating when tank is full requires less than a wheelbarrow load of wood. If the fire is started quite early in the morning we can begin filling about the middle of the afternoon.

The jars are rinsed in the morning, or a day or two previously, and dried by sun heat, using large windows for the purpose. We use soft water for washing and have it as hot as can be borne. This makes the jars clear and bright. The honey is heated to a temperature of 150 to 160 degrees and kept there for at least 3 or 4 hours. A longer time is still better, especially if the honey was granulated, and in this none should be drawn until the whole body is liquid.

The honey runs directly from extractor into tank and we do not worry about getting it out if it granulates while there. We expect to heat all of it anyway, whether granulated or not.

The oven holds about 8 dozen quart jars, in two tiers, or four 60-pound cans. The covers are loosened before heating and screwed down again when finished. Temperature of oven is regulated by leaving door partly open. We used second-hand fire brick for building the arch, but ordinary chimney brick would answer the purpose excepting, possibly, for the parts nearest the fire.

The rubber hose with cut-off can be swung around to fill a number of jars set in place on the table, but is not so convenient as we anticipated. Next season we expect to use a stationary pipe instead of the hose, with the jars placed on a small revolving table. As the table revolves the jars will pass under the cut-off, which the operator works with one hand while pushing the table along with the other. A second person will place the empty jars on the table and remove the filled ones as they come around. Other help can be used for putting on covers and labels.

Mt. Horeb, Wis.

The Acacias

By W. A. Pryal.

IF you have never lived in California, or in the native home of the golden-flowered acacias, you have no conception of what a beautiful sight one of these trees is when in full bloom during the winter months, especially in that portion of California about the bay of San Francisco. The fragrance of the flowers is delicious; there is hardly anything in the perfume line as genteelly sweet—and the pleasant odor permeates the atmosphere for quite a distance surrounding the trees. If delicious perfume is evidence of an abundance of nectar, then the acacias should be great nectar-secreting trees. But I am not prepared to give them such credit; in fact, my belief, based on a study of these trees extending over a quarter of a century, impels me to state that they are not rich in nectar, but I know that they are wonderful pollen-producers.

The acacia is a clean tree and fairly thrifty, though not a hardy tree in all portions of California. I have read that in the Eastern States they have to be treated as greenhouse plants, for the cold winters are too severe for them in the open. With us, many varieties grow to be tall trees, growing as high as 40 feet or more. Most of the varieties make stately trees, though some sorts are not symmetrical.

In and around Oakland *Acacia mollissima* has been planted for many years, as it is liked on account of its beautiful golden-yellow flowers, which are borne in great clusters or masses, and when the tree is in full inflorescence it has the appearance of being a gigantic plume or boquet of feathery-like gold. The flowers are very fragrant and are much used for decorative purposes. Bees work in the feathery bloom the live-long day during all bright days in January and February. Sometimes it blooms here as early as the middle of December, and I have seen it in blossom in Santa Rosa, this State, as late as the end of March. In the same year here it had finished its season of inflorescence fully a month sooner, and Santa Rosa is but 50 miles northwest of here.

The variety above mentioned is also styled *Acacia decurrens*, or black wattle, and is rated as one of the very best yielders of tanning bark known. From tests made by the University of California in 1898 it was ascertained that the California-grown bark yielded 13.5 per cent more tannin than did the Australian-grown bark. As there will always be a demand for high-quality tanning barks, and as the tree mentioned is of very easy culture and a rapid grower, it is probable that it has a great future before it in California. If planted extensively it will assure a valuable supply of pollen and, possibly, some nectar, for early breeding.

The wood is also of value to the cabinet-maker and the interior finisher. It is hard and works up with a fine grain and finish. The leaves of the tree have a fern-like appearance, as may be noticed by reference to the half-tone herewith presented.

Acacia melanoxylon is another tree much prized in Central California and, I believe, also to some extent in the southern portion of the State. It is largely planted as a street shade tree, and upon lawns upon large estates. It is more symmetrical than the variety first mentioned; it also grows more rapidly. In its report for 1897-8 the Agricultural Experiment Station of the aforesaid university says: "*Acacia melanoxylon*, the blackwood acacia, is a neat, straight-stemmed, symmetrical tree, of regular pyramidal outline; foliage very dense, dull green; flowers pale yellow, in the usual small globular heads. A desirable tree for sidewalk planting where compact growth and formal effect are desired. The tree is highly valued for many purposes. It is hard, finely grained, and takes a high polish. Even in the young state it makes an excellent firewood, about equal to oak."

This tree blooms later than *Acacia mollissima* and on that account is not

Acacia Mollissima

so valuable for the apiarist, for by this time there are many other flowers yielding nectar and pollen.

I have noticed that poultry, especially chickens, are partial to the seeds of the last-mentioned variety; they hunt the seeds among the dead and fallen leaves and litter under the trees. I should judge that the trees yield large quantities of seed, as they are loaded with seed-pods.

Besides these two acacias, there are several other varieties planted in this State, some of low growth and some fairly tall. The varieties here described and illustrated are the tallest we have—some specimens have already attained 60 or more feet in height.

Oakland, Calif.

Virgil, the Poet of Beedom

By D. M. McDonald.

THIS "silver tongued" poet devoted his "Georgics" to affairs of husbandry and his fourth was devoted wholly to bees and beekeeping. He pictures an old man, possessed of a few acres of land and devoting himself to its culture and that of his bees equalling in his contentment of mind the wealth of kings. There, surrounded by his beehives, he attained perfect happiness, and led an ideal life. Placed, as his apiary was, on a gentle slope overlooking the Bay of Naples, he had on every side all that the heart of a beekeeper could desire. The site, the poet says, must be a well sheltered one where strong winds cannot gain access. A ledge was planted at the adjoining boundary, where willow blossoms were fed on by the busy bees; and, under the welcome shade the beeman often dreamed the midday hours away, lulled by murmuring music of the honey-gathering throng. It was considered important that the bee garden should not be open to the disturbing incursions of sheep or frisky kids, or heifers rudely brushing the "dew" away, or bruising the springing flowers. "Aerial honey," it must be remembered, was believed to be gathered mainly from the dews of heaven. The flowers were not forgotten—"Let gardens fragrant with saffron flowers invite the bees. Bring thyme, and let fruit-bearing trees and bushes be abundant. Plant lime trees and apple trees to yield their luxurious bloom in spring; also elms, blackthorns and planes. The soft osier, the hoary willow and the tough broom all counts, as well as arbutes, grey willow, cassia, the golden-hued crocus, and the deep-colored hyacinth." For coolness near the hives he advises that a palm or stately wild olive should be planted to overshade the entrance.

Good beekeeper that he was, he had an eye to the comfort of his industrious workers. "Have clear springs and green, damp moss or shallow rivulets coursing through the adjoining meadow. If the water is deep throw willow branches crosswise into the stream that the bees may drink in safety on the frequent bridges." When in spring the bees roam through the lawns and woods to reap the harvest of the bright-hued flowers, and to feast on green cassia, fragrant wild thyme and strong-scented savory, as well as countless other flowers, it was no less necessary that they should lightly sip the surface of the streams, hence these carefully prepared drinking fountains. The hives in this model apiary were of the simplest kind, he tells us, made of hollow bark or woven with pliant osier. "They should have narrow inlets to prevent the heat of summer to cause the honey to run and hinder the colds of winter to cause it to congeal. To keep out the cold the bees smear with wax (propolis) the small crevices in their 'caps.' This glue is more tenacious than birdlime or the pitch of Phrygian Ida." Bees often made a comfortable home underground in hollow pumice stones, and in the cavity of some hollow tree. Bees still, in the nearer east, inhabit such hives as the clefts of the rocks, some warm cave or the heart of some rotting tree.

He calls the colony inhabiting each of these hives a marvelous miniature republic. Each unit has a large mind in a little body. "They have high-spirited chiefs, and, of course, a king. Their allegiance to this sovereign is matched by no human race of men in the fealty they display toward their chief. The king gone, the bond of union is severed. He safeguards their labors and they look on him with respect and awe, while all attend him in crowds."

"Bees at the same time have home rights. They pass their lives under inviolable laws, they know the true meaning of native country and settled household goods. They toil in summer that they may have stores in winter. All work in summer, all feast alike in winter. So powerful is their love of flowers and so strong their ambition to collect honey that they voluntarily yield up their lives for the good of the community as a whole. When battling against adverse winds they pick little stones to act as ballast, and with these they steady themselves through the unsubstantial vapor."

Their internal government is a marvel of perfection. All is arranged for the greater good of the greater number. Some have charge of the food, some busy themselves in the fields, some store the honey, some collect "gum" from the bark of the trees, some build downwards the viscid wax, others lead out swarms, "the hope of the race." Others pack up and seal the honey-cells, some guard the outer entrance, taking it by turns, some receive the loads of those who return, others in marshalled bands drive away the drones, "an inactive horde." All have one rest from work, all have one common labor.

Wise bees, they are genuine weather prophets, and do not go far from their hives when rain is impending or trust the sky when east winds approach. They are models in prescience, in morality and in conduct. They neither indulge in conjugal intercourse nor relax and effeminate their bodies in love, nor bring forth their young with throes of travail. But they themselves gather their progeny with their mouths from leaves and fragrant herbs. They themselves provide a sovereign and tiny subjects, and repair and replenish their palaces and waxen realms.

Virgil went so far as to say that many thought that bees possessed Divine intelligence; that they had portions of "etherial thought," and moreover, that at the end each bee soared, still alive and conscious, each to count a star, and mount to lofty heaven. Several of the gods of ancient times were supposed to have been bees in some former state of being. At that early period the life of a bee was believed by some to last

Acacia Melanoxylon

twenty or thirty years; our poet considered "The term of a short life awaits individual bees, yet the race remains imperishable—not more than seven years is passed by them."

He distinguished two different kinds of bees, and showed his preference for the one he characterized as the "better breed," because it was the race from whose combs you will press the most of sweet honey, and that of a better quality. As there were two kinds of bees, so he held there were two kinds of king. One is distinguished by his mien and conspicuous appearance. One king is disgustingly squalid, the other shines and sparkles with brightness, ablaze with gold.

The time of swarming was a joyful one. When swarms issue they float through the serene summer sky. Then, to attract them, sprinkle the juices prescribed, bruised balm and the herb of honey wort. Ring bells and beat around the cymbals of Mother Cybele (the Mother of the Gods), and they will settle themselves in the seats prepared. This seems to be a kind of self-hiving. A cure for undue swarming is given: "Just disable the wings of their chief and while they stay no bee will dare to leave the hive." Here is the origin of clipping the queen's wing. At swarming time, or at other periods, ancient bees were fond of engaging in mortal combat. Violent animosity and excitement arises between rival chiefs. Then hearts are panting for war. Sounds are heard like the trumpet and the bugle. Then they sharpen their stings on their proboscis. They meet in shock of battle, mingle in a whirling mass and fall headlong. Their chiefs wield mighty souls in their tiny bosoms. Then sprinkle over them a little dust and put the inferior leader to death, he being a superfluity.

Bees had many enemies in addition to rival bees. Keep the speckled lizard with scaly backs from the well-stocked hives. Of birds, the woodpecker is a determined enemy, and so is the swallow, for they devastate all around and in their mouths they bear away the bees while on the wing to be a sweet morsel to their merciless young. Cockroaches that shun the light, the fierce hornet, or the moths, a horrid crew, the spider with its nets around the doorway, are all noted enemies of bees. Above all, however, "fell disease," as in our day, entailed misfortune on bees and beekeepers. He gives elaborate directions for curing, but seems to rely on Schirach's remedy of first killing the bees, and, to cure, cleaning out and thoroughly disinfecting the hives.

In Virgil's time beekeepers appropriated the surplus honey twice a year—after the early and the latter flow. In carrying out this operation everything must be scrupulously clean. First wash your body, foment your mouth with draughts of water, and then with your hand thrust forward the persecuting smoke. If the stores are scant, or a severe winter is anticipated, he advises that they should be denuded of little honey, in order that their lives may be spared for another season of work and increase. This honey they looked on as the gift of the gods, which came down from the skies as a dew. The flowers gave glue, wax and "animable matter" from which bees were bred. The other means used for resurrecting bees and peopling hives where they died is told in the mythological tale of the shepherd, Aristaeus, but the legend is much older and was borrowed by Virgil from Egyptian literature.

The faultless poetry of the Fourth Georgic suffers both from translation and from being presented in prose, but as far as possible, the above has been given in the author's words.

Banffs, Scotland.

The Metal Honeycomb

By Dr. A. F. Bonney.

THE writer lately received a set (10) of the aluminum honeycombs advertised by a California party, and put them to use. They were put singly into brood-chambers filled with brood and honey, and in "Demareeing" I put four in the center and filled out with drawn combs, as I much prefer to put my foundation above an excluder, for it is drawn out closer to the frames.

After an interval of six days I examined all of the nine I had put in, and in every case the bees had gone to work in them the same as in the wax combs. I could not see that they had discriminated at all.

These metal combs are made of very thin aluminum, almost a foil, and are as deep as the average finished comb. They will, of course, be moth-larva proof, and as they are strengthened with three wires of about 20-gauge, English, running from top to bottom bars, they should resist the centrifugal action of the extractor nicely. However, there is I think, one very serious objection; the metal is so thin and soft that the slightest blow spoils the opening of the cells, when it is necessary to spend time to restore the size, if not the shape of the opening.

This defect might be remedied by using a thicker metal, but this, at the present price of aluminum, would make the cost prohibitive. The present price, 55 cents at the factory, is almost too high to allow their use on a large scale.

My remedy would be to make the cells about one-fourth of an inch deep, of a reasonable heavy metal, dip them in wax when they are mounted in the frames, and allow the bees to draw them out, as they will, as I know from experiments made recently.

I am now working on some square, round and triangular cells, merely to see what the little animals will do with them.

Buck Grove, Iowa.

There is another possible objection to this metal in combs. It is the effect of temperature in our changeable climate. Beeswax is a non-conductor of heat and it stands the differences between the coldest and hottest weather without bad effect. Metals are good conductors of heat and cold, and metal in the hive combs may be the cause of still greater troubles than we now have in wintering.—Editor.

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

Swarm Prevention in War Time

Never before has it occurred—and let us hope that it may never occur again—that so many women have been obliged to take up the care of bees because the husband, brother, or son, the beekeeper of the family, has been called to become a soldier in this war for righteousness. In many cases. it would be a thing greatly desired if the bees could be allowed to stand still, just as they are, until the return of the beekeeper, so that he might again take up the work just where he left off. That may not be; but it might be to some extent approximated if it were not for that troublesome thing—swarming. Left to themselves the bees will swarm and swarm, the swarms going off and being lost, and the summer's harvest being lost with them.

Fortunately, we are not entirely helpless, and there is no reason why a woman, as well as a man, may not be able to overcome the swarm-devil and end the season with a maximum crop of honey.

All queens should be clipped, the two wings on one side being cut away. Not that a colony with a clipped queen will not swarm; it will swarm just as promptly as if the queen's wings were whole. But she cannot go off with the swarm, and the swarm, finding it has no queen, will return. The worst thing that can happen will be that the queen will be lost; and it is better to lose the queen than to lose both swarm and queen. And then there will be a week or so to provide against a swarm going off with the young queen that will emerge.

Even while having all queens clipped, we must proceed so as to reduce swarming to a negligible quantity, if not to prevent it altogether, without reference to whether the queen is clipped or not. One of the important things is to provide ventilation. Not merely what might be considered plenty, but abundance of it. Unless there is a deep bottom-board with a large entrance, it is not a bad plan to raise the hive perhaps

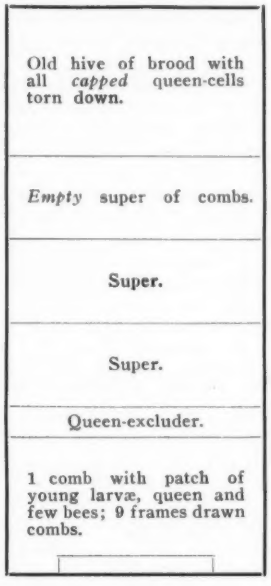
three-fourths of an inch by putting a block under each corner. But no amount of ventilation under the hive will suffice, we must have ventilation above as well. Let the first super be slid forward so as to leave at the back end a crack of one-fourth to one-half an inch. Then if the supers be extracting-supers—and it is better they should be—let the second super be slid back upon the first, so as to make a ventilating space in front; the remaining supers being slid alternately back and forth, so as to "stagger" the pile, as it is called. For years we have had one or more piles thus staggered each year, no excluder being used, the queen generally occupying more or less of two stories, and in no case has a swarm issued.

Of late years it is coming to be considered that there is less swarming if the frames are spaced 1½ inches from center to center than where the usual 1⅜ spacing is used. The Dadants use that spacing, and it is thought that it may be an important factor in their being so remarkably free from swarming.

It is doubtful, however, that any advice can be more important than the advice to use the Demaree plan to prevent swarming. In a nutshell, the plan is to have one frame of brood with the queen in the lower story under an excluder, and the rest of the brood above the excluder. The lower story may be filled out with frames filled with foundation, or better still, with fully drawn combs. At the time the brood is put up, all queen-cells found on the combs should be killed, and in eight days all cells above the excluder should be killed, if any are started there.

Enough supers of extracting-combs may be put on at the start to make sure there shall be room enough for all the white-clover harvest, and this should be taken off and extracted as soon as there is any danger that the darker fall honey might be mixed with it.

In an exceptionally fine article by Miss Iona Fowls, in June Gleanings she tells just what the practice has been in the Fowls apiary for the past five yars, giving the following diagram, which makes the matter very clear:


Old hive of brood with all *capped* queen-cells torn down.
Empty super of combs.
Super.
Super.
Queen-excluder.
1 comb with patch of young larvæ, queen and few bees; 9 frames drawn combs.

This she gives as the best plan for outapiaries, but there is no reason why it may not be used equally well in a home apiary. It has had a five-years' trial in the Fowls management. Miss Fowls says in explanation:

"This plan is: As soon as danger of swarming arises, every seven or eight days carefully examine the colonies, keep them always supplied with plenty of room, and destroying whatever queen-cells are found, providing they contain only eggs or young larvæ. When more advanced cells are found, place on the old stand a hive of drawn combs, one of which contains the queen, a few bees, and a few young larvæ. (If no combs are available, most of the frames may contain foundation; but there should always be at least three drawn combs, and a whole set, if possible). Above this place the queen-excluder; then two or three empty supers; and at the very top the hive of brood, tearing down only the capped queen-cells. At the end of seven or eight days, if no increase is desired, tear down all queen-cells again. If increase is wanted, simply place the upper story on a new stand and leave them to raise their own queen, or introduce a good queen or choice cell in a protector. It is not even necessary to remove any queen-cells; for when the new queen hatches, either she or the bees will attend to that. If one desires no increase, then the queen-cells may be destroyed and the brood distributed to other colonies or left to increase the original colony. That is the entire plan, and it has for years been used by many of the best beekeepers."

It may not be advisable in all cases to give as much super-room as the Fowls give; indeed, in some cases all that may be necessary is to have only the one-story of brood above the excluder, for that will allow for a harvest of one story of extracting-combs. In case, however, that increase is desired, and it is desired that cells may be started above the excluder, the higher the story of brood is raised above the queen, the more sure the bees will be to start queen-cells.

Denmark beekeepers in attendance at a short course in the apiary of Anna Sommer

Denmark Beekeeping

In spite of the slow postage—It now takes two months—I have received every number of the American Bee Journal sent except the February one, which went down with the steamer.

I will send you a picture of my place and bees, it was taken last year during a bee course. The course lasted four days and was attended by 26. The man holding the frame is the teacher, beside him is an open hive (we usually have the roof hinged on; it is held in place by a roof-holder, so it does not tip over.) Behind the next hive you find me. I am holding a queen-excluder, of the kind we use between the frames. Our hives are long, holding 18 frames; when the time comes, the excluder is put down between the 10th and 11th frames and those behind it are used to store honey in. My experience is that the bees prefer to carry the honey up rather than behind; but it gives plenty of room. Last year's honey harvest was quite fair, in spite of everything drying out, as no rain fell from May to August.

I enjoyed to read, in the November issue of the Journal, about those three succesful women beekeepers. I am sure I am the only one on our island keeping bees for a living, and I don't know of any other in Denmark, either.

It may surprise you that I can make a living on 1,000 pounds surplus; but the prices of honey have just doubled. The price in the fall of 1914 was 20 to 22 cents; in the fall of 1917 it was 40 to 44 cents. All my honey was sold on the local market, and had I had 1,000 pounds more it would have been sold right here on the island. No honey is used for cooking—it is too dear;—it is used

in place of butter on bread, or sugar or for health. Just now beekeepers are sending in their wants for sugar for the bees. Each beekeeper sends his request to the President of the Beekeepers' Association, of Bornholm (there are about 400), who sends them to the Board of the National Beekeepers' Association, of Denmark, who, in, turn, hands them to the Sugar Department at Copenhagen. No beekeeper, whether he is a member of the Association or not, can get sugar for his bees in any other way.

In March, 1917, the National Beekeepers' Association of Denmark arranged a course for teachers in beekeeping at the Agricultural High School at Copenhagen. The course lasted 11 days, and was attended by 26, of which I was one. There was a lecture on beekeeping (special bacteria pertaining to bee-diseases), entomology and botany.

I will send you a copy of the Danish Beekeepers' Times containing a picture from the course. The paper used to be issued twice a month, but will this year have only 14 numbers, on account of scarcity of paper. It has about 10,000 subscribers, which is almost equal to the number of members in the National Association, as every member gets the paper.

Wishing you prosperity, I hope and pray that God may speed the time when these fearful conditions that at present prevail in Europe may cease, thanking Him with full heart that our dear little Denmark has been saved from the direct sorrows and cruelties of the war.

ANNA SOMMER,
Lobbeck, Bornholm, Denmark.

MISCELLANEOUS NEWS ITEMS

Bee Statistics in the U. S.—Bulletin No. 685, of the United States Department of Agriculture, gives all sorts of statistics on beekeeping, distribution of colonies in the different States, increase, wintering, yields, quality of honey, sources of honey and pollen, conditions and prospects.

We judge that this Bulletin is indispensable to the beekeeper. Like all statistics, it is probably incomplete, but, like all statistics, it will supply some information worth having and will lead to further efforts and greater accuracy. It can be obtained in the usual manner, by writing to the Bureau of Crop Estimates.

West Virginia Beekeeping—This is the title of a 52-page Bulletin, profusely illustrated, and published by the State Commissioner of Agriculture. The author is Charles A. Reese, Assistant Entomologist and Apiarist. The bulletin contains the most indispensable information for modern beekeeping. Every West Virginia beekeeper should secure it. It is published at Charleston by the Department of Agriculture.

Wisconsin Association—The Wisconsin beekeepers who are not members of their State Association should send their names to Mr. Edward Hassinger, of Greenville, Wis., so that they may see what their State is doing for the good of beekeeping. In fact, every beekeeper who cares to succeed should belong to his State Association. Wisconsin has arranged to send its members at regular intervals suggestions on the prices to be secured for honey. They base their information on crop reports and markets.

The State Association has voted $50 to make a display at the State Fair showing the uses of honey. Premiums to the amount of $449 are offered at the State Fair in addition to this.

Meetings are organized all over the State and the prospects for beekeeping are fine, But if you want your share of the information and of the success, you should put your shoulder to the wheel. Every State needs to do its share for the general success of the industry.

Do Not Contract Too Closely—I should like to refer you to the Official Bulletin of June 24, a copy of which can be consulted at your postoffice if you do not happen to have a copy. In this are given the regulations and restrictions for the use of sugar which are put in force for July 1. You will notice that under the less essential uses they class "Honey Manufacture." By this they undoubtedly mean the use of sugar for feeding bees. In view of these regulations it might be desirable to recommend that they do not extract too closely, so that they will be able to get their colonies through the winter with very little or no feeding of sugar syrup. It is impossible at this time to learn how much sugar will be available next fall, and these regulations and restrictions are changed from time to time so that it must not be assumed that the present regulations will apply next fall. In any event we must see to it that there is no tendency on the part of beekeepers to extract all of their honey to sell at high prices and then expect the Government to furnish them with sugar at a low price to take the place of honey which they have sold.

E. F. PHILLIPS,
Washington, D. C.

Will It Work?—If putting a valuable queen in a hive above a strong colony, for heat, with emerging brood is a good plan, and there is, of course, no safer way of introduction, will it not be equally good to put a ripe cell in the same location with, say five or more frames of emerging brood, let it stay a few days, then remove to a new location?

I am trying it out, but thinking that other amateurs may be as anxious for more colonies of bees as I am, I wish to get to the attention of beekeepers while yet there is time to start new colonies. A. F. BONNEY.

(This, of course, would have to be over a queen-excluder, if there is a queen in the hive. If there is no queen, the introduced queen or cell will be as safe below.—Editor.)

Honey Vinegar—I sent you under separate cover a sample of honey vinegar. This was made about a year ago, following directions from the A, B, C Bee-book, and also from the articles in the American Bee Journal, by Mr. C. P. Dadant. It is stored on the second floor. Please state how I can make it more sour. Or, in other words, how can I improve it?

WISCONSIN.

Either of two things is the cause for the failure of fermentation. The liquid may be too sweet. In that case it would require more water.

However, I am under the impression that the trouble lies in lack of fermentation. Put your vinegar into a boiler and bring it to the boiling point. This will kill noxious germs which may have developed and might prevent fermentation and cause the vinegar to become ropy. Then let it cool; add about as much water as you may have evaporated in the boiling and put in about a gallon of fruit juice. Keep the bung off and put it in a warm place. If you have no fruit juice, wait till the grapes are ripe and use unboiled grape juice. To keep insects out of the keg, use a small sand-bag on the bung. But be sure and keep the keg where it will be warm.—Editor.

Texas Inspector to Kansas—W. E. Jackson, until recently in charge of bee inspection work for the State of Texas, under F. B. Paddock, the State Entomologist, has recently been called to the colors. Mr. Jackson reported for duty on May 31, and has been assigned to the medical laboratory at Ft. Leavenworth, Kans., for work in bacteriology. Mr. Jackson's place under Mr. Paddock has not yet been filled.

Nebraska Meeting—The Nebraska Beekeepers' Association will hold a meeting at the Nebraska State Fair for the purpose of changing and adding rules to the by-laws of the association.

The meeting will start at 9 o'clock in the morning of Thursday of the fair week, which is the first week in September.

Frank C. Pellett is expected to be present at this meeting and also several more good authorities. Some very important matters will come up and it is the business of every Nebraska beekeeper to be present.

O. E. TIMM, Secy.,
Bennington, Nebr.

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Markets

Honey arrivals since last report:

Medina, O.—177,007 pounds from California, 120 pounds from Ohio, 2,160 pounds from Arizona, 45,915 pounds from Texas.

Shipping point information, Saturday, June 29:

Los Angeles, Calif. — Very light shipments. Demand slow, on account of exporters having difficulty in securing ship space and delivery at terminals; steady feeling. Few large growers holding for higher prices, dealers buying to fill orders only. Cash to producer on farm: Extracted white orange, 20-21c per pound, mostly 20c; light amber, few sales at 16-18c per pound; alfalfa amber, supplies very light, but increasing, mostly 15-16c per pound. White comb, too few sales to establish market; few sales reported at $4.50-6.00 per 24-section case. Beeswax, demand slow, weaker tendency, mostly 34c per pound.

San Francisco, Calif.—Demand and movement moderate. Growers holding for higher prices, eastern buyers holding off on account of high prices. Demand good for export, but uncertainty of securing steamer space and British Government Food Regulations retarding movement. Prices to growers f. o. b. shipping point: Extracted orange 20-20½c, sage white 18-19c, light amber 16-18c, alfalfa 15½-17c. Beeswax, 33-38c per pound.

Telegraphic Reports from Today's Markets

(In many markets in the honey trade the term "jobber" is commonly applied to the original receiver who buys direct from the grower in carlot quantities. However, in these reports we use the term "wholesale carlot receiver" to designate the carlot purchaser, while the term "jobber" refers to the dealer who buys in less than carlot quantities from the carlot receiver and who sells direct to retailers. The prices quoted in this report represent the prices at which the "wholesale carlot receivers" sell to the "jobbers.)"

Note.—Arrivals include receipts during preceding two weeks. Prices represent current quotations.

Chicago—Supplies insufficient to quote.

Cincinnati—3,869 pounds Florida extracted arrived. Supplies light. Demand light. No sales reported. Beeswax: Demand moderate. Average yellow, 35-38c per pound.

Denver—No carlot arrivals. Comb and extracted, supplies exhausted. Beeswax: Receipts and supplies very light, steady feeling. Price to producers, 35-37½c per pound.

Kansas City—Receipts very light. Demand light, movement moderate, firm feeling, few sales. All sales in small lots. Sales to jobbers: Native Missouri, quality and condition generally good; 24-comb flat cases, No. 1, light, $7.50. Beeswax: No arrivals. No sales reported.

Minneapolis—No arrivals. Supplies very light. Demand slow, weaker tendency. Minnesota and Wisconsin: Comb, white fancy, 24-section cases, old supplies cleaning up $4.75-5.50. Extracted, white fancy 60-lb. pails, 20-21c per pound.

The late C. Becker

St. Paul—No arrivals. Supplies very light. Demand slow, market fair. Minnesota and Wisconsin: Comb, white fancy, 24-section cases, few sales; all sales in small lots, mostly $6; special brands, cartons, $6.75; extracted supplies exhausted. Beeswax: No sales reported.

New York—Arrivals: 108 barrels West Indies, 82 barrels, Porto Rico, 10 tierces Porto Rico, 130 barrels Florida, 1 car from Cincinnati. Receipts moderate. Demand and movement moderate; market quiet. Extracted, per gallon, Porto Rican $2.25-2.50; Floridas, $2.16-3.00, according to quality, mostly $2.25-2.40. Beeswax: Arrivals, 28 barrels West Indies, 345 bags Cuba, 37 bags South America, 90 bags Porto Rico. Receipts increasing. Demand moderate, market steady. Yellow, 40-42c per pound; dark, 39-41c per pound.

St. Louis—No arrivals. Supplies very light. No sales.

Philadelphia — Approximately 120 barrels domestic southern arrived. Demand good; strong feeling; very few sales. Buckwheat, old crop, 23c per pound; southern domestic, amber 25c per pound.

Death of Chas. Becker—We regret to announce the death of Mr. Chas. Becker, of Pleasant Plain, Ill., one of Illinois' best-known beekeepers, and for many years Treasurer of the Illinois State Beekeepers' Association.

Mr. Becker has also been an exhibitor at the Illinois State Fair for many years and never failed to take his portion, at least, of the premiums offered.

The sympathy of all Illinois beekeepers and others who knew him goes to his family.

Bottom Starters for Extracting Frames

Beekeepers have found a great advantage in the use of bottom starters in sections. There are more advantages in using bottom starters in frames. With frames containing foundation placed over the brood-nest, I find that the bees begin to build from the bottom rather than from the top, expanding the cluster instead of starting a new one. By the use of bottom starters one gets better combs with the frames almost perfectly filled. With the combs attached firmly to the bottom bar the queen is easier to find, as there are not so many convenient hiding places. I have found that nine and a half supers of combs built with bottom starters hold as much honey as ten supers built in the usual way. It is equally desirable to use bottom starters in brood frames or extracting frames to insure good combs.

C. E. FOWLER,
Hammonton, N. J.

Transferring From Box Hives

To transfer bees from a box-hive, take a large box that can be turned over the box-hive, cut a hole through the bottom 4x5 inches. Nail strips on the outside of the bottom to serve as a bottom for a regular hive. Make an opening in the top of the box-hive to be transferred, then turn the transfer box over the box-hive and have the 4x5 opening over the hole in the top of the box-hive. Shovel dirt around the bottom and stop all cracks or knot holes, so that all bees must come up through the top of the box-hive. Now set a regular hive with a frame of brood and empty combs on the strips nailed on the transfer box. This box now becomes the bottom board for your regular hive. The bees will move up into the frame hive, and I have had them carry up every drop of honey, making the melting of the combs in the box-hive an easy job.

F. A. DUNHAM,
Walla Walla, Wash.

Weights for Hive Covers

For preventing covers from being blown off by the wind it is much more convenient to have weights

that can be lifted by one hand. I take a square box three or four inches deep, without top or bottom, or a fish kit without top or bottom, and fill with cement, same as is used for sidewalks. Before filling, place the receptacle on a loose board. For handles use any old piece of iron that is long enough to bend in shape. Imbed handle in cement as soon as mould is filled. These are very handy and beat a brick or flat rock a mile.

DR. E. W. PARKER,
Sutherland, Iowa.

Cement Weights for Hive-cover in the apiary of Dr. and Mrs. E. W. Parker at Sutherland, Iowa

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Breeding

1. Why is it that I can't get an Italian queen to stay with me? I have ordered about a dozen queens and have not had any of them to stay; they would stay from a month to six weeks and disappear. I do not know where they go; do you? I guess they are hurt in the mail.

2. Can you tell me the name and address of a reliable queen-breeder in or close to my state?

3. Does an Italian queen raise pure Italian drones when her bees are crossed?

4. How do you get the queen to lay in drone cells that you want to rear drones from?

5. Does sweet clover bloom every year after it commences blooming?

6. Don't you think it would pay to order untested queens and select a breeder.

ARKANSAS.

ANSWERS.—1. I don't know, and have little data to base a guess upon. A queen might be injured in the mail, but in that case she would hardly continue on duty a month or more. If it were in swarming time I should say she might abscond with a swarm. Bees sometimes have queer streaks, and it is possible that it just happened that a number of queens went wrong with you, and that the very next will go all right.

2. Those who advertise in this journal are considered reliable, and among them you ought to be able to find one not very far away. For that matter, distance does not make much difference, and queens from any part of the country ought to reach you safely

3. Yes, if a queen of pure stock meets a black drone, her drones will be pure Italian and her workers hybrid.

4. Let them have some drone-comb near the center of the brood-nest.

5. No, it blooms but once. The first year it grows without blooming, the next year it blooms, and then dies, root and branch.

5 Yes.

Queen Introduction

I wonder how you cage your queens when treating for foulbrood or otherwise.

This spring I brought in a couple of my best colonies to feed up and treat early for foulbrood by caging the queen 10 days or more so as to have something free to work with in rearing cells that I might need. I caged them in an ordinary mailing cage with no attendants or candy, and placed them under the quilt and put on a slow feeder. In 8 days I pulled out all the cells and in a few more days I killed everything that looked like a cell, and then I made sure of releasing them safe.

The queens were well taken care of during confinement. I waited until after dark, when all was quiet, and to make matters doubly safe I poured them on in thick honey. Results: In one case the queen was rolled out the next morning, in the other it was a few days, and she, too, came out at the front dead.

I have since caged some with excluder zinc over the cage and released with better luck, in fact found them laying the next day.

I find a good per cent of queens caged 21 day in the way I mention are let starve by the bees. I notice some if caged with zinc do not start cells.

KANSAS.

ANSWER.—I am puzzled to know why you should have had such misfortune, and the only clue I can see toward even a guess lies in your statement, "I find a good per cent of queens caged 21 days in the way I mention are let starve by the bees." That "good per cent" makes it seem possible that you are in the habit of caging queens something like 21 days, and that that was the trouble in the cases you mention. I don't know just how long bees will endure a queen that is a slacker, but if she fails to supply the cells with eggs at a proper season I am pretty certain they will cease to have patience with her after a certain time. That time may have elapsed, and then as soon as you let the queen out of the cage they attacked her.

As to the way I have caged, I have had no particular way, and have taken no special precaution. In a few cases I have caged them in the way you describe, in a mailing cage, but generally in the simplest kind of a cage made of wire-cloth, putting the cage between the combs or thrusting it into the entrance of the hive. I have thus caged them hundreds of times, and do not recall a single failure. But if I should allow a queen to be caged much more than ten days (and I'm not sure that even ten days' time is needed in treating European foulbrood), I should hardly look for such constant success.

That's the only guess I can make, and if that guess is right, of course the remedy lies in shorter caging.

Adel and Caucasian Bees

Where does the Caucasian bee come from? Where does the Adel bee come from? I asked another bee journal and they said from Caucasia. In Dr. Miller's "Thousand Answers" it says they were a strain of Italians, and the queen breeder from whom I purchased some said they were a strain of Carniolans. The bees are different in color from the Italians; they vary from black to 5-banded. The queens are either black or golden. Some colonies are good and others are very poor.

ANSWER.—The word "Adel" is a German word meaning nobility, and was used by an American beekeeper as a sort of fancy name for his strain of bees, just as you might entitle your bees "best-of-all" bees.

No doubt Caucasian bees come from Caucasus, as indicated by the name. Please say where in Dr. Miller's "Thousand Answers" you find it said that Caucasians are a strain of Italians. I find nothing of the kind at page 39, where Caucasians are considered.

Reports vary as to the character of Caucasians, but I don't remember that anyone heretofore has reported such a variation in color. Are you sure yours are pure?

Cell Protectors

1. I am having this season quite a number of colonies that look prosperous, but get just one or two queen-cells, especially one I examined yesterday was in appearance equal to the best; has brood and eggs, not a single egg in cup did I notice; but there was one well-developed capped queen-cell. How would you have treated that colony?

2. I noticed in one of the bee journals lately that someone gave queen-cells in protectors. I have a few of them, but have been unable to see that they amounted to anything, at least in this way. I practice considerably to give queen-cells, but rarely otherwise than giving the colony apparently needing one the whole frame as it is, with the queen-cell on it. If it has over one, leave the best only. What, then, is the use of a protector? Or, do you think that colonies do not take well to queen-cells as just stated, if they come from other colonies—do such need protection?

3. One of my very best colonies I found yesterday with a big lot of eggs in cups in two frames of the upper body, but none at all in the lower body. I hope to keep this colony from swarming until queens ordered arrive, whereupon I expect to divide. What do you do under that circumstance—that is, when there are a number of cups with eggs, but nothing further, and you would like to have swarming deferred with the purpose of thwarting it later on? What is the significance to you of eggs in cups?

ANSWERS.—1. Likely I would have left it to its own devices, in the belief that the bees were superseding their queen. Even when a

queen seems all right, the bees appear to know that she will soon fail, and that single cell points plainly to superseding.

2. I hardly think bees discriminate against a cell from another colony. It is unnecessary to use a protector where not needed; but if you dequeen a colony and at the same time give it a cell, a protector is needed.

3. I would kill the eggs, and again destroy all cells a week later. Cells with eggs may signify either swarming or superseding.

Raising Queens—Bee-Tree

1. If I take a couple of frames of brood containing eggs three days old or younger and some bees without a queen and put them in another hive without a queen or even a queen-cell, will the bees make a queen-cell out of a worker-cell and rear themselves a queen?

2. What do the bees get to make the comb of?

3. If I find a bee-tree on another man's land have I a right to cut it without his authority or knowledge. What would be the best thing to do?

ANSWERS.—1. They might rear a queen, but hardly one of great value. To get a good queen your cells should be reared in a strong colony and left there till sealed, or, still better, until within a day of hatching.

2. Honey and pollen.

3. The best thing, indeed the only thing, is to obtain permission of the owner of the tree.

Queen-Cells—Increase

1. Can I make queen-cell bases myself? If so, how should I proceed?

2. How long can a queen be kept in a nursery in the hive before mating?

3. One of my colonies is making two queen-cells on the combs. Now I have a plan of making increase something like this: When the swarm issues I intend to take the brood out, divide it in two parts, 3 combs and 1 comb with queen-cell on, put each part in an 8-frame hive, then put the swarm back on the old stand on two of the combs of brood still left. It is a 10-frame hive. I would fill the rest of the space in each of the three hives with full sheet of foundation, and the supers of the parent colony on the swarm. The swarm would probably be due about the last part of June. That would give each of the three a chance to build up for the gathering of fireweed, which comes here in August. That would give me 66 per cent increase and some surplus. Now, do you think this will work? I think that one of the queens might emerge before the swarm issues, or that the 2 queenless but queen-cell parts upon the mating of the emerged queen swarm out with her.

What is your opinion about this? I expect them to build up on clover. We have practically no rain in July; that would help in pushing them along. Adverse weather conditions retarded brood-rearing in latter May.

ANSWERS.—1. Yes; any straight bar may be fastened in the frame toward the upper part, and to this the cells may be attached.

2. I don't know; but I don't believe it is well to keep her more than a week or so; in fact, the shorter the time the better.

3. Your scheme seems all right in the main, but aren't you a little astray in counting that an increase of two from one would be 66 per cent increase? If you start with one colony and have an increase of one, that would be 100 per cent increase; if you have an increase of two wouldn't that be 200 per cent increase? In the hive with the queen on the old stand you will do well to have only one frame of brood instead of two.

Normally, neither of the young queens will emerge before the swarm issues, but it is not unusual for some of the bees to swarm out with the virgin on her mating trip.

Super Ventilation

1. After hiving a swarm of bees, where should the supers be placed on the new hives?

2. Please state the best method for ventilating hives in hot weather. ILLINOIS.

ANSWERS.—1. If you have a queen-excluder on the hive the supers can be put on at once; if not, you should wait until a brood-nest has become established in the brood-chamber, for fear the queen will go up and start a brood-nest above. You will generally be safe if you wait about 3 days.

2. The best way to ventilate depends somewhat on the construction of the hive. If the bottom is not fastened to the hive, it may be raised by a block under each corner. Some have a bottom-board 2 inches deep, and to prevent the bees building down into it there is a bottom-rack which allows free ventilation. There may also be ventilation above the brood-chamber. The first super may be shoved forward so as to leave at the back end a space of a fourth inch or a half inch between the hive and super. If extracting-supers are used they may be staggered, the second super shoved back so as to make ventilation in front, the third shoved forward to make ventilation at the back end. The first section-super may be shoved forward as already mentioned, but there can be no ventilation between any two section-supers. There may, however, be ventilation at the top by means of a cover so constructed as to allow the air to pass up through the center of the super.

Splints or Extra Wires

Would the No. 30 wire used as you use your wooden splints and imbedded by electricity be of much advantage in a frame already wired with four wires? We have some trouble with foundation buckling between the wires, and the combs sometimes break when new when we extract them. If the wires will be of advantage, how many would you use? Will they do as well as the wooden splints? COLORADO.

ANSWER.—Yes; I've used five wires vertically, and it works well. I like the splints better, but you may not.

Miscellaneous

1. Is early spring or late fall the best time to unite bees in modern hives?

2. Are hybrids more cross than blacks or Italians?

3. Which are best in your climate, the standard 8 or 10-frame hive?

4. Was last winter very severe in your apiary?

5. What do you use to pack your hives with for winter?

6. How many colonies have you?

7. Do you advocate the use of full sheets of foundation in hives?

8. Do you use a veil while handling bees?

9. In the way of removing queen-cells to prevent swarming, should it be every 8 or 10 days?

10. What do you consider the best method of preventing bees from swarming?

11. How is the honey flow in your location this spring?

12. From what plant in the first harvest does your main honey flow come from? OHIO.

ANSWERS.—1. Generally it is better to unite in the fall. The united colony will winter better than a weak colony left without uniting. But early fall is better than late fall.

2. Yes.

3. 10-frame.

4. No; the winter doesn't make any difference with my bees, because they are kept in cellar.

5. In the cellar they need no packing.

6. Have had up to 400. At present only a tenth of that.

7. Yes; you lose money by using less.

8. Always have one on my hat, and generally pulled down.

9. Ten days will do all right, and even longer; but for fear of bad weather or some other hindrance some prefer to make the time 8 or 9 days.

10. I doubt if there's anything better than the Demaree plan.

11. Not very good; too much cool weather.

12. White clover.

Flax a Good Honey Plant

1. Is flax considered a good honey plant? There will be quite a little flax raised around here this year. A few years ago we saw a

2. What do you consider the best months for honey in northwest Iowa? IOWA.

ANSWERS.—1. I have never heard of flax being much of a honey plant, but if you saw a field of flax just alive with bees you may count that it is some importance, for bees don't fool away their time where they can get nothing.

2. Probably June some years, and July others.

Swarm Prevention With Queen Excluder

On May 30 I found one No. 23 colony building 7 queen-cells sealed. I found and caged the queen, destroyed all queen-cells, removed the hive from its stand and put in its place a hive containing four frames of foundation. Upon this hive was put a queen-excluder and over the excluder the old hive with its brood and bees, and over this two supers, and over the supers the cover. Then the queen was run in at the entrance of the lower hive and the colony was left for seven and one-half days. There was no ventilation at top and the entrance was measured 7⅛x12⅜. On June 7 I took away the lower story with its excluder and put back the queen in the old hive, which was left on the stand. I found two frames were occupied by the queen. On June 14 the same colony swarmed and the swarm was lost.

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W. S. S. WORTH $5.00 JANUARY 1. 1923

so I was surprised. After the swarming I opened the hive and found a new queen hatched out, and no queen cells. I think the virgin was born on June 14 or 15. The colony was located in a good shade, where trees stand. One super was half full. Can you tell me what caused the swarm? Do you clip the queen's wings before using excluder plans?

INDIANA.

ANSWER.—When you put up that brood, you killed the queen-cells, but there was brood in all stages, from which, no doubt, the bees started cells. When you gave back the brood to the queen you probably destroyed cells, but one might easily escape you, and that one would be enough to cause the swarming.

You returned the brood in 7½ days. Sometimes that's all right, and sometimes it isn't. Ten days is safer.

Swarming—8-Frame Hives Vs. 10-Frame Hives

1. What, in your opinion, was the matter with my bees? One evening about 6 o'clock what seemed to be a small swarm issued and, after circling around my few stands, they tried to settle on the limb of a peach tree. Just then a rain storm came and the bees tried to enter into several of my hives, but were killed off. Yesterday morning about 7 o'clock the same thing happened again, only this time only one of my hives was attacked and lots of bees killed. As I thought the bees were robbing, I piled grass in front of this hive and sprinkled water on it. Do you think the bees swarmed, or was it a case of robbing? It certainly was an unusual time of day for them to swarm.

2. I am running for extracted honey and am using the shallow extracting super 5⅝ in deep, and a week ago I noticed drone brood in the lower edge of the frame in the supers next to the hive body. But now I also find worker-brood in supers. Would you advise me to use queen-excluders?

3. I am using 8-frame hives of my own make, but will buy the factory-made hives from now on. Would you advise the 8 or the 10-frame hives? We have no important honey plants here in East Texas, and our honey comes in rather slow. Although my bees have plenty of super room, they are laying out at nights in big clusters in front of the entrance and in front and back of supers. Only one of my colonies has swarmed. I use full sheets of foundation. TEXAS.

ANSWERS.—1. It is hard to be certain, but it looks like an afterswarm trying to enter different hives and being attacked by the bees of the hive they tried to enter. I say afterswarm, because these little swarms with virgin queens are more likely to do such unreasonable things.

2. If there is much trouble in the way of brood in supers, you will do well to use excluders, although you will find less trouble if you change from 8 to 10-frames.

3. You will most likely be better pleased with the larger hive.

New Jersey Beekeepers' Association will hold a field meet at Branchville, Sussex County, at Mr. O. M. Whitaker's apiary, on August 9. Program will start at 10 o'clock. Everyone is invited. E. G. CARR,
Secretary-Treasurer.

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LUTZ & STAHL, Keokuk, Iowa

That Good Queen

in your colony that is two years old. Are you going to try her another year? Are you going to gamble on your next spring's crop? Probably she has kept your colony booming for two years. If she hasn't you don't want her. If she has **Don't** keep her. **Why?** Because she has "exhausted herself." She is no longer a young queen. Next spring she will fail you. Your colony will be weak. And in the spring rush the flow will be over before you can get another. Don't risk your 1919 crop for the sake of 75c. Why not requeen this fall with

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and be sure of your next spring crop. Over a quarter of a century of select breeding brings them up to a standard **Surpassed by None but Superior to Many.** We guarantee pure mating, safe arrival, and perfect satisfaction.

	1	6	12
Untested	$ .75	$4.25	$8.00
Select Untested	1.00	5.00	9.00
Tested	1.50	8.75	17.00
Select Tested	2.00	11.00	20.00

Write for circular

W. J. FOREHAND & SONS
Fort Deposit, Alabama

"Griggs Saves You Freight"

TOLEDO, O.

Say, Mr. Bee Man, have you placed that order for supplies yet? If not, remember we not only save you freight, but time and money as well.

DELAYS ARE DANGEROUS

But don't delay, as Railway Embargoes are all the rage now, and you may be caught.

LARGE NEW STOCK ON HAND

All ready to ship out, direct from ROOT'S, who know how to make good goods.

HONEY AND BEESWAX

Always wanted; cash or in trade. Send for FREE CATALOG.

S. J. GRIGGS & COMPANY

Department No. 24 **Toledo, Ohio**

"Griggs Saves You Freight"

Classified Department

Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS

ITALIAN QUEENS from best stock; produce gentle, excellent honey gatherers; very prolific and unexcelled winterers; untested, 90c; 12 for $10; tested, $1.30; select tested, $1.75; extra select tested, $2.50; breeders, $5; hybrid pound packages, per pound, $1.50; nuclei, per frame, $1.50. Add price of queen wanted. Prompt deliveries. No disease.
Golden Queen Apiaries,
R. Kornegay, Jr., Mgr. Mt. Olive, N. C.

QUEENS—3-banded Italians, select untested, $1.50; select tested, $3; select tested breeders, $10. Safe arrival and satisfaction guaranteed.
Clinton Bradway,
Monson, Mass.

FOR SALE—1 untested Golden Italian Queen, 65c; hybrids, 25c. J. F. Michael,
Winchester, Ind.

FOR SALE—3-banded Italians; queens from best honey-gathering obtainable. Untested queens, $1 each; 6, $5; 12, $9. Safe arrival and satisfaction guaranteed.
W. T. Purdue, Ft. Deposit, Ala.

FOR SALE—Strong colonies of bees with Golden queens in 8 and 10-frame hives; excellent honey gatherers.
Mrs. Anna L. Moore, Newton, Ill.,
Care Fahenkopf.

ITALIAN QUEENS—Northern-bred, three-banded, highest grade, select untested, guaranteed, queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price, one, $1; twelve, $10; fifty, $35. Send for circular. J H. Haughey,
Berrien Springs, Mich.

FOR SALE—Golden Italian queens that produce good honey gatherers; no foulbrood. Select tested, $1.25; tested, $1; untested, 75c; 6, $4.25; 12, $8 No bees for sale.
D. T. Gaster, Rt. 2, Randleman, N. C.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

TESTED leather-colored queens, $2.00; after June 1, $1.50; untested, $1.00; $10 per doz.
A. W. Yates, 3 Chapman St., Hartford, Conn.

FOR SALE—Northern Bred Italian Queens; hardy, prolific goldens, each, $1; six, $5.
Allen R. Simmons, Claverack, N. Y.

FOR SALE—Three-banded Italian queens; untested, one, $1; six, $5; twelve, $9. Tested queens, $1.50 each. Rob't B. Spicer,
Wharton, N. J.

PURE 3-banded Italian queens, as good as you can buy with money; no disease, and every one guaranteed. Write for prices. No more nuclei or colonies for sale this season.
J. F. Diemer, Liberty, Mo.

GOLDENS that are true to name. Untested queens, $1; 6, $5; 12, $9; 50, $35; 100, $67.50. Garden City Apiaries,
San Jose, Calif.

THREE-BANDED ITALIANS ONLY—Untested queens, each $1; 6, $5; 12, $9; 50, $35; 100, $67.50. H. G. Dunn,
The Willows, San Jose, Calif.

FOR SALE—Pure Italian queens; goldens that are golden, and Doolittle's choice stock. Select untested (laying queens), 1, $1; 6, $5. tested, $1.50; best breeders, $5. For large lots write for prices. Pure mating, safe arrival and satisfaction I guarantee. J. E.Wing,
155 Schiele Ave., San Jose, Calif.

SWARTS GOLDEN QUEENS produce golden bees of the highest qualities; satisfaction guaranteed. Mated $1, 6 for $5; tested $2.
D. L. Swarts, Lancaster, O., Rt. 2.

FOR SALE—New crop clover honey, extracted, two 60-lb. cans to case, 20c per lb.
H. G. Quirin, Bellevue, O.

GOLDEN ITALIAN QUEENS—No better honey gatherers anywhere at any price. Untested, $1; tested, $2.
Wallace R. Beaver, Lincoln, Ill.

GOLDEN QUEENS that produce Golden workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1 each; tested, $2; breeders, $5 and $10.
2Atf J. B. Brockwell, Barnetts, Va.

QUEENS—H. D. Murry's strain of 3-banded Italians; reared by the Doolittle method. Prices untested, 1 for $1, 6 for $5, 12 for $9. No disease. Safe arrival and satisfaction guaranteed. O. D. Rivers,
Route 4, Honey Grove, Texas.

FOR SALE—Colonies of extra fine strain Italian bees, with select tested queens, in new 1-story 8-frame single wall-hives, standard full-depth, self-spaced Hoffman frames, $10 each, f. o. b. here. The bees are free from disease.
Wilmer Clarke, Earlville, Madison Co.,N.Y.

FINEST ITALIAN QUEENS, June 1 to November, $1 each; 6 for $5. My circular gives safe methods; free. J. W. Romberger,
3113 Locust St., St. Joseph, Mo.

GOLDEN and 3-banded Italian queens will be our specialty. We can also furnish Carniolians. Tested $1, untested 75c each. Bees, per pound, $1.50; nuclei, per frame, $1.50. Send your order for bees early.
C. B. Bankston & Co., Buffalo Leon Co., Tex.

THREE-Banded and Golden Italian Queens and pound packages from the Sunny Southland. Grant Anderson,
Rio Hondo, Texas.

FOR SALE—Golden Italian Queens that produce gentle and good honey-gathering bees. My bees were prize winners at the Illinois State Fair. Mated, untested, $1; select untested, $1.25; tested, $2. No bees for sale.
A. O. Heinzel, Lincoln, Ill.

HONEY AND BEESWAX

WE are in the market for honey and beeswax. Send best price on comb honey and sample of extracted honey. State quantities you have, also style, size and weight of package or section. Charles Israel Bros.' Co., Inc.,
486-490 Canal St., New York.

QUICK CASH for extracted and comb. Send sample, or describe and say price.
Bruner, 3836 N. Kostner Ave, Chicago. Ill.

CASH paid at your bank for carlots and less, of comb and extracted honey.
Wesley Foster, Boulder, Colo.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

WANTED—White or light amber extracted honey in any quantity. Kindly send sample, tell how your honey is packed and your lowest cash price; also buy beeswax.
E. B. Rosa. Monroe, Wis.

WANTED—Comb, extracted honey, and beeswax R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill

HONEY LABELS

SEND TODAY for samples of latest Honey Labels. Neat, attractive labels at lowest prices. Catalog free Liberty Pub. Co.,
Sta. D, Box 4-H, Cleveland, O.

QUEENS THAT WILL PLEASE

OVER 20 YEARS OF CAREFUL SELECTING AND BREEDING

GUARANTEE

You take no risk in buying my Queens, for I guarantee every Queen to reach you in first-class condition, to be purely mated, and to give perfect satisfaction.

They are bred from **Imported** stock. The very best bees for honey gathering and gentleness. They are not given to swarming and are highly resistant to disease. Give me your order and if, after you have given my queens a fair trial, you are not satisfied in every way that they are as good as you have ever used, just return them and I will send you queens to take their places or return your money with any postage you have paid out on returning the queens.

	1	6	12
Untested	$ .75	$4.25	$8.00
Select Untested	1.00	5.00	9.00
Tested	1.50	8.75	17.00
Select Tested	2.00	11.00	20.00

Untested, $60 per hundred.

L. L. FOREHAND : : FORT DEPOSIT, ALA.

TYPEWRITER SENSATION

3.00 a Month Buys Visible Writing L. C. Smith

Model No. 5 perfect machines only of standard size with keyboard of standard universal arrangement—has Backspacer—Tabulator—two color ribbon—Ball Bearing construction—every operating convenience. **Five Days Free Trial.** Fully guaranteed. Catalog and special price sent free.

HARRY A. SMITH, 314 -- 231 North Wells Street, CHICAGO, ILL

WANTED

WANTED—A good honey location to start a line of apiaries; will give a suitable reward for the best reliable information.
D. E. Lhommedieu, Colo, Iowa.

WANTED—White sweet clover seed; send sample; state quantity and your lowest price in first letter.
Dadant & Sons, Hamilton, Ill.

WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Ill.

WANTED—Second-hand honey extractors; tell me what you have and price; also wax presses. W. D. Soper, Jackson, Mich.
Dealer in all kinds of Bee Supplies.

SITUATIONS

WANTED—Two men to work with bees; state age, experience and wages; position for season, or may be permanent for right man after trial. The Rocky Mountain Bee Co.,
Billings, Mont.

WANTED — Industrious young man, fast worker, as a student helper in our large bee business for 1918 season. Truck used for outyards and hauling. Apiaries located near summer resorts. Will give results of long experience and board and small wages. Give age, weight, experience and wages in first letter.
W. A. Latshaw Co., Clarion, Mich.

FOR SALE

FOR SALE—New No. 15 latest model, slip gear Cowan Extractor, $20. One slightly used, standard gear, $16. Lorenzo Clark,
Winona, Minn.

FOR SALE — Thoroughbred Single Comb Rhode Island Reds, $10 per setting of 15 eggs. Heavy laying strain. W. L. Harper,
Cucamonga, Calif., Rt. 1, Box 68.

TINS at a saving; 2-lb., 5-lb. and 10-lb. friction top tins. A bargain.
Bruner, 3836 N. Kostner Ave, Chicago. Ill.

FOR SALE—Beehives, nailed and painted 10-frame; 1,000 1⅞x4¼ No. 1 sections; some foundation. Will sell at bargain.
S. F. Hanson, Hiawatha, Kans.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

BEAUTIFUL FARM HOME—Improved, rich soil, well located, good buildings, 100 colonies of bees, up to date, best honey-producing location in State; not crowded; average for past seven years 105 lbs; 5 acres of ginseng golden seal, all ages, in fine shape. One-half artificial shade, one-half natural. Price $80 er acre; $7,000 for farm and bees, 150 extracting supers with combs, 100 excluders, 2-frame extractors, 2 large honey tanks, 150 shallow supers. Terms, $3,000 cash, balance on time. Will sell a part or all. A wonderful opportunity; a bargain. Poor health reason for selling. W. M. Penrod, Ronneby, Minn.

FOR SALE—Shallow extracting supers, 8-frame 50c, 10-frame 55c each, in lots of 5. Wood-bound zinc, 22c; wood and zinc, 24c. A few 4x5 or 4¼x1½ No. 2 sections at $4 per 1,000. Write for prices on other goods.
H. S. Duby, St. Anne, Ill.

FOR SALE—Having been drafted, I am offering for sale 40 colonies of bees, free from disease, in 8-frame dovetailed hives. Hives are in good condition, standard size. Also about 75 full-depth extracting supers, with drawn comb. Combs are all wired from full sheets of foundation. In order to dispose of these I will sacrifice them at any price. Let me hear from you. Paul D. Roban, Waverly, Minn.

FOR SALE—Honey jars at reduced prices; all sizes. Write your wants to
D. H. Welch, Racine, Wis.

FOR SALE—Beehive factory; seven apiaries with extracting equipment; comfortable cottage home and auto truck. All for $5,000 cash.
J. O. Hallman, Helena, Ga.

CANS AND SHIPPING CASES

We have a fine stock of Five-Gallon Cans and Shipping Cases; also Comb Foundation, Extractors, Honey Tanks, etc. Quick shipments.

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BEE SUPPLIES
Quality ... Service

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"Practical Queen-Rearing"

Is the title of the new bee book, cloth bound, 100 pages, which has just been written by Mr. Frank C. Pellett, who is well known to our readers.
For many years there has been a demand for a book which would give in concise form the many different methods of queen rearing, as the Doolittle, Pratt, Dines, Miller, Alley and others with variations as practiced by different large breeders.
You have this in the new book which is just out. Send for your copy now and get informed as to your best method of rearing queens from your best colonies. Good pointers in it also for the large beekeeper and veteran queen breeder.
Price, postpaid, only $1.
By special arrangement we can offer it and a year's subscription to the **American Bee Journal** for only $1.75.
(Canadian orders 15 cents extra.)
AMERICAN BEE JOURNAL, Hamilton, Illinois

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Buyers of EXTRACTED and COMB HONEY
Shippers and Exporters of HONEY

[The WORLD is Our Market]

Crop Report and Market Conditions

For our August issue we asked the following questions of reporters:

1. How large is the honey crop, compared to last year?
2. What are the prospects for the rest of the year, compared to last year?
3. Has the increase made been sufficient to balance all last winter's losses and bring the total of the bees above what it has ever been before?
4. Is honey in good demand? Is it being sold as fast as harvested?
5. What prices are being obtained, wholesale and retail, for both comb and extracted? What do you expect to get for your own crop,, and how much have you?

THE HONEY CROP

Maine reports a crop about equal to 1917, with Vermont and New Hampshire reporting about 80 per cent as much. Massachusetts claims 125 per cent of 1917.

New York claims to be better generally than last year, with conditions still in doubt, owing to the lateness of the crop.

All of the South shows an increase in honey over 1917, with the exception of Louisiana, where the crop is poor. Georgia reports 75 per cent of 1917, but Florida claims 175 per cent, Alabama and Mississippi 200 per cent, Tennessee 150 per cent, with Kentucky below last year's average.

Texas will probably average from 25 to 40 per cent better than in 1917, with far from a good crop yet. Some localities are still short, though not as short as in 1917.

In the Central States, Ohio is about 25 per cent better than it was, Illinois and Indiana are better, because they had a crop failure in 1917. Conditions have improved greatly in these sections and some surplus will be stored, though far from anything like a moderate crop. Over most of Iowa there will be a little honey, but this does not include the sweet clover regions of the extreme west, where the crop is above last year, one reporter claiming 125,000 pounds from his 950 colonies.

Michigan will probably have from 25 to 50 per cent as much honey as in 1917, partly owing to a lack of bees. Wisconsin has had a crop failure, two or three reporting less honey than ever before remembered. Minnesota is the same. South Dakota has fared better, owing to the sweet clover, and will be slightly better than in 1917. Kansas and Nebraska are both slightly better than last year, while Missouri will have a very short crop.

In New Mexico there will be 150 per cent as much as in 1917, while Colorado claims about what they had last season, which is in the neighborhood of two-thirds of a crop. Montana will average well up to last year, as will Idaho. Wyoming may have a little more honey than it did in 1917.

In California reports are conflicting. Most reports are that there will be from 40 to 70 per cent as much honey as last year. The Imperial Valley will range well up to last year, as will Riverside County. One reporter in Acton states that he will get three times as much as in 1917, but the bulk of the reports are as above stated.

FALL REPORTS

Prospects for the balance of the crop rank generally about up to 1917, except that conditions seem to be unfavorable in Tennessee, Minnesota and Wisconsin.

The following States expect more honey from now on than they got in 1917: New York, Western Iowa, Nebraska, Kansas, Wyoming.

INCREASE

Great efforts have been made by beekeepers to retrieve previous losses and bring the number of bees above what it has been in the past year or two. Most localities report all losses made up and possibly some increase. Those States making the most increase seem to be Florida, Ohio, Western Iowa, South Dakota, Nebraska, Kansas, New Mexico, Montana and Wyoming.

Texas claims that it will take a year or two yet to make up past losses, and California claims bees not up to past numbers yet. Missouri, with successive poor crops, is very short of bees.

On the whole, there are hardly more bees than in 1917, and very likely less, especially if the smaller farmer beekeeper is taken into consideration, and this, too, in spite of the efforts of most beekeepers to follow the urging of the authorities to boost honey production.

HONEY DEMAND

In most instances the honey is still on the hives. Local demand is very good and there is no difficulty in disposing of the crop, if the beekeeper is satisfied with the prices being offered him. Bottlers are buying, but not like they did in 1917.

It has been suggested that honey should hardly hold its present high mark, owing to the difficulty of shipping abroad. It is certain that shipping agents and forwarders have difficulty in getting space on boats. In spite of this, however, honey is moving to England, and brokers on the job in New York do not hesitate to offer on all honey offered them. Shipping conditions, too, should improve as the time goes on.

HONEY PRICES

In our last report we suggested a minimum price of 20 cents for white extracted honey. We see no reason to change this, unless it should be slightly. We know of two cars of sweet clover honey from Mississippi being sold for 20 cents per pound f. o. b. shipping station. This is for new crop.

One Georgia producer sold 200 barrels extracted at 18 cents, while his comb went for $4.50 per case. He states that he will take no less for the balance of his crop.

Some of the offers are being made to producers as follows: Kentucky white, 22c; Texas, 18c; Colorado, 18c and $5.50 for comb; California amber, 18½c; white, 20c; water white, 22c.

Members of the Montana Association had a meeting recently and recommended the following as the minimum which should be obtained: White extracted, 20c, and comb $6 per case.

Several producers, some of them having as high as 100,000 to 200,000 pounds, are expecting to hold for a price of 25 cents for white extracted, while one of Colorado's largest comb honey producers is asking $6 per case for No. 1 comb honey.

One New York broker has suggested that he can get 22 cents for amber and 24 cents for white in cans f. o. b. New York, his brokerage to be deducted. Depending on the freight rate, this would net from 19 to 20 cents for amber and 20 to 22 cents for white.

We see no reason for changing our idea of relative prices. Prices as recommended by the Montana Association should be obtained. Possibly the market will advance, but information at hand now would hardly warrant our suggesting it to subscribers, though it hardly seems that prices as above will see much shrinkage, unless something unforeseen should occur.

KEEP INFORMED ON TEXAS CONDITIONS

The **Beekeepers' Item,** a monthly paper edited by Mr. Louis H. Scholl, well known to our older readers, and an authority, has many interesting items which should interest beekeepers, not only in the Southwest, but throughout our country.

In order to allow you to become acquainted with this paper, we offer a special combination of **Beekeepers' Item** one year with **American Bee Journal** for only $1.25.

Or, if you desire, we can send you your choice of **First Lessons in Beekeeping,** or **Practical Queen Rearing** with the **Item** one year for only $1.25.

Send all orders to

AMERICAN BEE JOURNAL
HAMILTON, ILL.

Texas Queens

No more bees in packages, but queens galore from June 1 to October 1. Untested, 75c each, $8 per doz.; tested, $1.25 each, $12 per doz. I have the Three-banded Italians and Golden Italians; very choice stock.

GRANT ANDERSON,
Rio Hondo, Texas.

Weis Fibre Containers

FOR EXTRACTED HONEY

Neat, clean, leak-proof, and inexpensive. Especially adapted for home market.

Send for prices. Samples, postpaid, 15c in stamps.

M. H. HUNT & SON, Agents

LANSING, MICHIGAN

Don't stop advertising.
because honey is high. Make it more in demand, so the price will stay where it is. Little stickers on your letters, papers, etc., will help. Printed as below in bright red.

Price of 1,000 gummed, 35c.
American Bee Journal, Hamilton, Illinois

Bee Primer for the prospective beekeeper or beginner. A 24-page pamphlet, finely gotten up, with illustrations. It gives a general outline of bees and beekeeping such as desired by the amateur. Two pages are devoted to instructions to beginners. Price, postpaid, 15 cents, or sent free with a year's subscription to American Bee Journal at $1.00.

Attention Eastern Beekeepers

WE HAVE A COMPLETE STOCK OF

Lewis Beeware and Dadant Foundation

We are located on a main line of the New York Central and the West Shore, as well as branches of the Pennsylvania and Erie Railroads; also the Rochester & Syracuse Electric Line, which assures prompt delivery. Parcel Post orders receive prompt attention.

Five and ten-pound pails, also five-gallon cans and glass jars.

Queens, three-banded and Golden Italian, ready for delivery now. Untested, $1 each; 6 for $5.50; 12 for $10; tested, $2; 6 for $10.

Safe delivery guaranteed, dead queens being replaced upon their return.

THE DEROY TAYLOR CO.
Newark, New York

Golden Italian Queens

RUSTBURG, VA., R. No. 3, March 18, 1918.

Mr. Ben G. Davis:

Dear Sir—Please find enclosed $5, for which please send me the very best Golden Queen you can for the money. If you can't ship her at once, please notify me. I ordered one from you 3 years ago last fall that was the best I ever saw. Her bees stored 320 pounds of comb honey the first year. I have several of her daughters that are fine.

Hoping to get a good one again, I am yours truly,

J. W. LAWRENCE.

PRICES OF QUEENS

	Nov. 1 to May 1			May 1 to June 1			June 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12
Untested	$1.50	$ 7.50	$13.50	$1.35	$ 6.50	$11.50	$1.00	$ 5.00	$ 9.00
Select Untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00
Tested	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00
Select Tested	3.00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00

No Nuclei or Bees by Pound.

Safe arrival, purity of mating and satisfaction guaranteed.

Queens for export will be carefully packed in long distance cages, but safe delivery not guaranteed.

BEN G. DAVIS : : Spring Hill, Tenn.

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The only Canadian bee publication. Keeps beekeepers closely in touch with Apicultural conditions in Canada. It is the official organ of the Beekeepers' Associations for the three provinces—Ontario, Manitoba and New Brunswick.

Beekeeping and horticulture are effectively combined to make a live, attractive and practical publication.

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QUEENS Hardy, Long Lived and Disease Resisting QUEENS

Twenty-Two Years of Select Breeding Gives Us Queens of Highest Quality -- Queens for Honey Production -- Queens of Unusual Vitality

"There are few Queens their equal and none better."

WHAT BEES DO, HEADED BY OUR QUEENS

"One swarm made 185 sections of honey and another 296 sections. I am well pleased."—MELVIN WYSONG, Kimmell, Ind.

"Your bees averaged 150 pounds of surplus honey each. I find them not only hustlers, but gentle."—FRED H. MAY, Meredosia, Ill.

"I have tried queens from several different places and like yours best of all."—C. O. BOARD, Alabama, N. Y.

"We are only one mile from Lake Erie and exposed to high, cold winds; in fact, this is the windiest place along the great lakes. Your bees were able to stand the winter with only an insignificant loss, and we would have no others. As for honey, they averaged 175 pounds of extracted surplus, did not swarm, and gave an artificial increase of 80 per cent, which is as fine a record as can be had in this locality, especially when the work is done entirely by amateurs." Name furnished on request. North East, Pa.

Price List of Our Golden and Three-Banded Italian Queens

Untested	$ .75; 25 or more, $ .60 each	Select untested	$ .90; 25 or more, $ .75 each
Tested	1.50; 25 or more, 1.25 each	Select tested	1.75; 25 or more, 1.60 each

We guarantee safe arrival of all Queens, that they are very resistant to European foulbrood, and, in fact, will give complete satisfaction. Wings clipped free of charge. Our capacity is 2,000 Queens monthly.

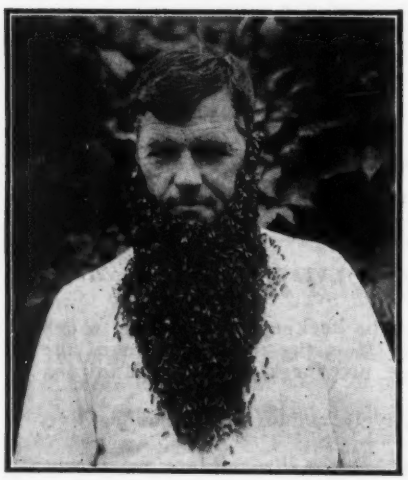
M. C. BERRY & COMPANY, Hayneville, Alabama, U. S. A.

Mr. Beekeeper:

Increase your honey crop by giving the bees all the super room that they can fill. We will help you by furnishing you with fixtures ready for use, at the lowest prices. Hives and supers, nailed and painted; frames, wired and filled with full sheets of foundation; sections, filled with foundation, can be shipped on short notice. The LEWIS LINE is in the lead with the live honey producers.

WESTERN HONEY PRODUCERS
Wholesale and Retail Distributors
SIOUX CITY, IOWA

"OUR BEES ARE GENTLE"



Write for descriptive booklet.

Re-Queen

from our vigorous strain of

Italian Queens

They have won a national reputation as disease resisters and great honey-getters.

Our prices for delivery after June 15:

Untested, 1 to 4, $1 each; 4 to 6, 95 cents each; 6 to 9, 85 cents each; 9 to 12, 80 cents each; 12 to 24, 75 cents each.

Tested, $1.50 each.

Breeders, $5 each.

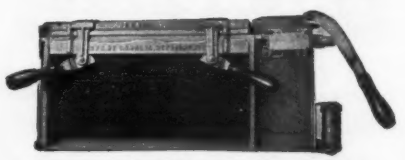
JAY SMITH

Route Three **VINCENNES, IND.**

PATENTED
Wright's Frame-Wiring Device

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2.50, postpaid in U. S. A.

G. W. Wright Company, Azusa, Calif.



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C. O. BRUNO NAILING DEVICE

Made for the Huffman Brood Frames. A combined Nailing, Wiring and Wedge Clamping Device. Does the work in half the time. Has been tried and is guaranteed to do accurate work. Makes the frames ready in one handling. Price $6.50.

Complete directions for operating are furnished with each device.

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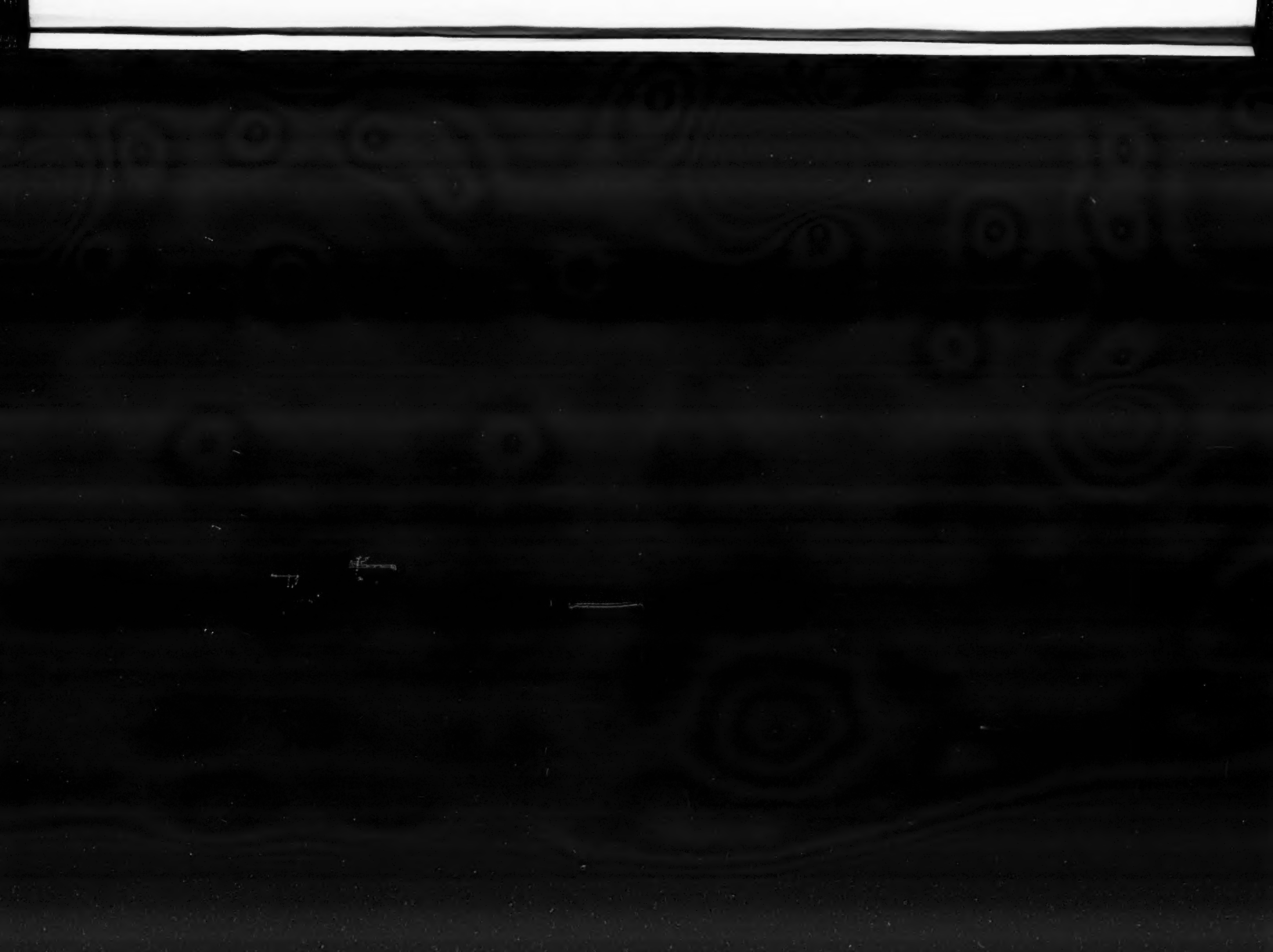
1413 South West Street, Rockford, Illinois



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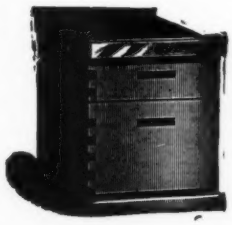

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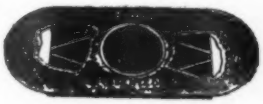

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